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SOME EFFECTS OF HOSPITALIZATION ON THE CLINICAL STATUS OF PATIENTS

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The fact that a patient has to go to a hospital is usually interpreted as meaning that he will be in a place of refuge and security, free of the usual stress and strain of ordinary living, and therefore relaxed and at ease. This view of the hospital as an asylum or a refuge may be especially adhered to for persons who seem prone to have difficulties with other persons in their environment. The implication is that the usual discords and incompatibilities in everyday existence with other persons have been rendered unimportant by hospitalization, or are in temporary abeyance.

In this paper, we hope to demonstrate that such a view of the hospitalized patient is incomplete, and in fact may be seriously inaccurate. The hospital patient lives in close contact with a number of other persons, the other patients and the professional and nonprofessional staff of the hospital. Such interpersonal relations can assume varying degrees of significance to the individual patient. Further, it is our conviction that these relationships may influence his course in the hospital. Consequently, the first of our specific purposes in this report is to describe changes in the clinical status of patients that appeared in response to the vicissitudes of residence on a medical ward.

Our second purpose is to go beyond this simple description; it is to suggest ways in which the physician can make productive use of these naturally occurring human contacts, either in clarifying diagnostic thinking or in facilitating therapy. First, in regard to diagnosis, it can be shown that the effects of the changing relationships during hospitalization may be either detrimental or advantageous. They can be detrimental in precipitating exacerbations, which, if not recognized as possibly due to interpersonal difficulties, may be obscure. They may also interfere with the patient's adherence to, or response to, the established medical regimen. On the other hand, if changes in the course of the illness as it is seen in the hospital can be recognized as arising out of specific interpersonal difficulties, useful insight can be had into the role of emotional factors in the disease process. In addition to the use of such observations as a diagnostic aid, their use may also facilitate the therapeutic program. Our experience has been that the proper utilization of specific attitudes in the individual patient toward others in the ward community can benefit the total treatment program, and in some cases the physiological status directly. At times, this involves fostering the attitudes; at other times, it involves helping the patient to modify them.

This study is presented with the recognition that the interrelation between emotional and physical processes is complex. There are many unknowns in this difficult area, and further clarification of these mechanisms is highly desirable. Yet the weight of these unknowns often appears so great that in practice any attempt at clarification of this interrelationship becomes relegated to the position of an unattainable and impractical ideal. Unfortunately, this attitude produces a serious loss, since even incomplete knowledge may be of great practical value. Our general intent is to demonstrate that our partial knowledge of these psychological processes may be put to a highly practical use in the medical management of physically sick people.

The following descriptions and discussions of specific situations are designed to illustrate our observations and activities. Three categories have been delineated to facilitate a description of the major variant in the psychological environment that effected change in the clinical status of the individual patients. Obviously, the factors as annotated overlap; the division is made only for simplicity of presentation. The three categories concern (1) the relationship between one patient and one or more other patients; (2) the relationship between the patient and a member of the ward staff; and (3) conflicts between one member of the staff and one or more of the remainder of the ward personnel.

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All of these observations were made on patients resident on a small medical ward referred to as a psychosomatic ward and administered jointly by the department of internal medicine and the department of psychiatry of the Cincinnati General Hospital. The unit consists of one five-bed room, three two-bed rooms, and one room for a single patient. There is also a combination recreation and dining room. The decor of the ward is more attractive than that of the usual public general hospital facility. During the period in which these observations were made, the principal purpose of the ward was to provide an opportunity to house officers in medicine for a more leisurely and intimate contact with and study of inpatients with physical ailments. For this reason, the types of patients and the roster of disease entities for the most part closely approximated those of a regular medical ward. The moving principle in the study of the patients was to examine the possible interrelations between the patients' personality functioning and the diseases from which they suffered.

In the following descriptions, no attempt has been made to relate the complete medical histories. Instead, emphasis has been placed on the data relating to the point to be made. Unless it is specifically indicated otherwise, all the patients discussed can be assumed to have been receiving pharmaceutical, dietary, or physical therapy appropriate to the disease with which they were afflicted. In none of the cases under discussion were changes in these regimens of themselves correlated with the described changes in clinical status; where any of these treatment measures were of particular significance, they are mentioned.

RELATIONSHIPS BETWEEN PATIENTS

The first group of cases concerns observations of changes in the clinical status of patients centering around the relationship between one patient and another patient (or patients).

CASE 1.—A 39-year-old Negro woman with tuberculosis was placed alone in a single room in an effort to facilitate the necessary isolation precautions during her treatment. It was known that the patient had been a mild alcoholic for many years; however, since the death of her mother two years before admission, her alcoholic intake had markedly increased. On admission to the hospital, the patient was jaundiced, febrile, cachectic, and obviously seriously ill. A liver biopsy revealed cirrhosis and hepatic tuberculomas, and treatment with streptomycin and para-aminosalicylic acid was instituted. Over the following 17 weeks, with this therapeutic regimen, clinical signs slowly remitted, and it was believed that her general response was good. Of serious concern, however, was a persistent weight loss to a degree that death from inanition seemed likely. Occasional spikes in fever occurred. During an interview one day with the patient, it became apparent that she was quite depressed. Prolonged bedfastness in a single room secluded from human contact and in addition a general decrease of interest in this chronic case by the personnel seemingly contributed to the patient's depression and lack of hope in recovery.

Fortunately, isolation was no longer necessary, and the patient was transferred to the five-bed room. In the larger room a relationship was encouraged between this patient, who had a need to receive support and attention, and another patient, who manifested a need to indulge others. The ward personnel were stimulated to revive interest in the patient, and within a short time the depression lifted. Her appetite improved, her weight increased for the first time since admission, and fever spikes disappeared. The patient gradually became ambulatory, and she slowly but definitely recovered.

Comment.—This case demonstrates that recognition of the possible influence of emotional factors on the course of any disease process can stimulate active and fruitful inquiry. Recognition of the presence of depression was the key in this instance. Appreciation of certain personality needs suggested the specific steps to be taken to facilitate recovery, and motivated the encouraging of the meaningful patient-to-patient relationship. Of probably equal importance was the change effected in the attitude of the personnel. This case serves to emphasize the point that the chronic case can become unfortunately less interesting and consequently be neglected by the staff. That this dropping of interest might have contributed to a fatal outcome in this patient is striking. Had she continued in her downhill course and died, the death might well have been ascribed to the toxic effects of the tuberculosis rather than to the depression.

The following case demonstrates how observation of a meaningful series of events offered a means of clarifying the etiological role of emotional factors in the present illness.

CASE 2.—The personal history of a 30-year-old white woman with asthma revealed that the onset of her current illness followed her grandmother's death eight years previous to the patient's admission to the hospital. Always a person of limited personality strength, the patient's adjustment to life had been tenuous. Her equanimity had been maintained largely through the close relationship she had established with her grandmother. Consequently the latter's death seemed to be an event of sufficient significance to suggest an etiological role in the onset of the patient's illness.

During her period of hospitalization, the patient befriended an elderly hypertensive woman who occupied the adjacent bed. The personal history of the hypertensive patient indicated a life pattern of independence and kindly control over the members of her household. Within the hospital she was customarily referred to as "the ward mother" by the other patients in the five-bed room. During her first month of hospitalization, the asthmatic patient seemed to find a feeling of comfort in the close and dependent relationship that she developed with the hypertensive patient. When the hypertensive patient subsequently became moribund as a result of uremia, the younger patient precipitously manifested severe bronchial asthma. The night the hypertensive patient died, the patient with asthma began to complain of abdominal swelling and expressed fear that she herself was dying. The following day she became frankly psychotic, which necessitated transferring her to a closed psychiatric ward. For the next four days she was manic in her behavior. She denied her own illness as well as the deaths of the hypertensive patient, her grandmother, and her father. Much of the content of her verbalization and hallucinations concerned guilt-laden sexual material. During these several days of psychosis, however, the asthma completely disappeared, the only time that she was completely free of signs or symptoms of asthma during the total four month period of hospitalization.

Comment.—The rapidity in formation and the intensity of the relationship with the other patient demonstrated the magnitude of this patient's need for such a figure. The relationship resembled in kind her description of her contacts with her own grandmother. The nature of her abrupt, untoward reaction to the other patient's death gave credence to the original hypothesis that the correlation in time between the onset of illness

and the death of her grandmother was more than coincidental.

The following case exemplifies how a commonplace occurrence such as the death of a patient on a medical ward can have both a positive and a negative effect on the course of another patient's illness.

CASE 3.—A 28-year-old white man was admitted to the ward for the purpose of investigating his complaints of epigastric pain, eructation, vomiting, and weight loss. In addition, he described feelings of moderately intense and diffuse anxiety, and in appearance he was tense and distraught. He voiced suicidal, homicidal, and paranoid ideas. On the basis of the history that was obtained, it seemed apparent that this personality decompensation had begun several years before, following his father's death.

Following the death of another male patient on the ward, one of the nurses noted that the patient had become quite disturbed. He was agitated and argumentative and had experienced an increase in gastric symptoms. The nurse relayed her observation to his physician and provided the additional information that the patient had been talking at length of the other patient's death. The patient was interviewed and found to be exceedingly anxious. He had a number of complaints about the ward and described increased anxiety and stomach distress. The discussion ultimately dealt with the other patient's death, which he agreed had upset him. He expressed the notion that the patient who died had been "experimented with" and "neglected," adding that "the nurses should have been more alert in using the oxygen tent." He voiced much concern over the deceased patient's terminal respiratory distress, and from this embarked on a discussion of his father, who had died in similar respiratory distress of silicosis. He told of his resentment against the company for which his father had worked because of its failure to provide his father with a "respirator." The patient agreed that he had been thinking of his father since the other patient's death and voiced especially his sense of guilt about the disrespect he had shown his father when he was alive. The discussion of this affect-laden, intimate material rapidly effected a close and useful doctor-patient relationship, which the patient until this time had been unable to establish satisfactorily.

Comment.—Initially, all that might be said is that the event of the other patient's death had a deleterious effect and that we were provided with the not-startling demonstration that psychological upset coincided with intensification of symptoms. More than this, however, the opportunity was opened to obtain more precise information about the nature of the psychological stress, e. g., the guilt in connection with his own father's death. Furthermore, in obtaining this helpful information, immediate psychotherapeutic activity was spurred; the patient was enabled profitably to ventilate affect-charged thoughts, and in so doing was brought to a more positive relationship with his physician.

The next case illustrates the constructive use to which can be put the tendency of patients to form specific kinds of interpersonal relationships.

CASE 4.—An 18-year-old woman from a marginal income social group had had clinical thyrotoxicosis for a year. She had been repeatedly urged to enter the hospital to prepare for surgery. Each time, shortly after she was put to bed, she signed out of the hospital on one pretext or another. On her fifth admission, she was sent to the psychosomatic unit. On evaluation, it was evident that she had a number of psychological problems, some of which could have been postulated to be so anxiety-laden as to be contributory to her present illness. However, the weight of the current realistic economic and familial strife and of her deprived and conflictual past made it impracticable to plan direct psychotherapy of the observed emotional factors. Consequently, the treatment goal was established of preparing her for thyroidectomy. As she was being evaluated, it was discerned that she had a constant personality trait of being exceedingly attentive to others. Outside the hospital, she gave full reign to this proclivity, often to the point of self-deprivation. It was evident that coming into the hospital had previously meant interdicting this pervasive activity. It was thought that this probably influenced the signing-out on previous occasions. Therefore, on this admission, instead of the patient's being put to bed, this personal tendency to do things for others (which served primarily as a barrier against recognition of her own unsatisfied needs to be similarly taken care of) was utilized, and she was strongly encouraged to help the nurses and the other patients in their routine needs. She entered into very protective relationships with several patients, and despite being "busy" all the time, her pulse rate and basal metabolism rate gradually fell. She adjusted placidly to hospitalization and subsequently underwent successful surgery.

Comment.—In this case, the recognition of a significant personality trait did not become simply a matter of academic interest. The recognition gave rise to a comparatively simple maneuver, the principle of which was to allow her to utilize in the hospital a previously most valuable character trait for her. Allowing and encouraging her to express her personality needs towards the other patients coincided with the obtaining of optimal "physiological rest."

RELATIONS BETWEEN PATIENTS AND HOSPITAL PERSONNEL

The second group of cases concerns patients for whom changes in the clinical status arose out of the relationship between the patient and hospital personnel.

CASE 5.—A 28-year-old woman had been transferred from another hospital where she had been under treatment for severe bronchial asthma. Part of the reason for the transfer was to evaluate the influence of emotional factors in her illness. The physician assigned to care for her in our hospital was not particularly interested in the psychological aspects of medicine. As a fulfillment of his responsibility, however, he saw the patient regularly to accumulate a detailed personal history. With this, he developed sympathetic feelings for her. On her part, by the 10th hospital day, she evidently felt trusting enough of him that she confessed some guilt-laden sexual material. Up to that time, she had been continuing to suffer severe and frequent asthmatic attacks. Shortly after her confession she obviously became quite dependent on the doctor. She brought her very disturbing family problems to him, and in general seemed to be comfortable with him. In such a setting, she showed a definite decrease in her symptoms. When, in a staff conference, an inquiry was made of the physician, he disclaimed the probability of the positive physician-patient relationship's being a significant factor in her improvement. He felt the improvement, despite the absence of significant change in the pharmaceutical regimen, involved principally the use of various bronchodilators. At any rate her course continued satisfactorily for several weeks. At the end of that time, the physician's schedule took him to another ward. He did not discuss his leaving with his patient, but simply went to take up his new duties. By the next day, her asthma was much worse, and within a week she had bronchopneumonia. It took several weeks for her to form any semblance of confidence in the succeeding physician. The rejection by the first physician reawoke very disturbing feelings about similar experiences of rejection in her distant past. She talked in a hostile manner for months about her inability to trust physicians.

Comment.—In the course of the medical management of acutely ill patients, the physician can come, even unknowingly and without planning, to assume a position of great significance to the patient. This case exemplifies the disturbing effects of a physician's failing to comprehend this fully. There was a deleterious effect

not only on the symptomatology but also on her ability to be secure in another physician-patient relationship. From the diagnostic point of view this case, by direct observation of the patient in a living situation, reinforced the hypothesis that separation from an important person was a significant emotional stress to this asthmatic patient.

The following case presented an opportunity to observe how, unwittingly, the personal inclinations of ward personnel can become ensnarled in the personality needs of the patient.

CASE 6.—The patient was a 22-year-old woman with rheumatoid arthritis. She had during the course of her illness manifested a marked tendency to be unduly helpless and dependent on others for emotional support. She had developed an effective technique of evoking love and care from others by attracting them to her by means of a rather childish, naive appeal. The history, including that from outside sources, revealed that the circumstances of her early life resulted in her obtaining few of the emotional comforts ordinarily satisfied by loving parents. For example, her father was a severe alcoholic who showed little interest in his family and who was a poor financial provider; her mother was a strange, withdrawn, and probably psychotic person who was repeatedly beaten by the father. As a result of this kind of childhood experience, the patient had fears about her own sexual and hostile impulses and in addition had excessive unsatisfied needs for love from, and dependency on, others.

The patient was on the ward for a rather long period, during which she developed a close relationship with one of the nurses. This nurse, who is a very giving person and quite conscientious about her work, virtually adopted the patient. Her manner toward the patient was a solicitous and protective one, more appropriate to a helpless, sick infant. The amount of attention she gave was not only more than she ordinarily gave to other patients, but out of keeping with the physical needs of the patient.

From the psychological viewpoint, this nurse-patient relationship became a detriment; it became apparent that the role of being rigorously protected and babied by the nurse was satisfying a long-felt wish of the patient. On the one hand this might seem a good thing; however, a new problem appeared in that the patient became uncooperative in any concerted attempt at physical therapeutic measures. Also, attempts at directly approaching her psychological problems met with marked resistance on her part. It was evident that these measures were interpreted by the patient as threats to the continuation of her relationship with the nurse. When this was finally recognized by her physicians, an attempt was made to abrogate the nurse-patient relationship, but it did not meet with complete success.

Comment.—In effect, the nurse-patient relationship in this case was perpetuating a feature of the patient's emotional problem that the physician was attempting to correct, namely, her tendency to sink back into a role of helplessness. Some of the emotional needs of both the nurse and the patient were being met in their relationship, but unfortunately this was not a constructive situation for the patient.

The experience of this case suggests the advisability of vigilance over the automatically formed attitudes of those caring for patients lest they foster detrimental neurotic developments. It serves as a reminder that although tenderness and solicitude are commendable ingredients of patient care, large measures of them are not always advisable and do not necessarily hasten recovery. The expression (although not necessarily the having) of such feelings might best be calculated according to the needs of the individual patient.

CASE 7.—A 62-year-old white man with dermatomyositis was admitted to a general medical ward where high interest was aroused among many physicians because of the comparative rarity of the disease entity. Following the initial diagnostic period, the interest of the personnel sharply decreased, and the patient was considered to present a routine problem in management and to have a poor prognosis. Treatment consisted mainly of the giving of salicylates. On this regimen he became progressively inactive and weak, finally reaching the point of almost helpless invalidism. It eventually became apparent to one of the attending physicians that the patient was actually quite depressed, and the suggestion was made that he be transferred to the psychosomatic unit for additional evaluation.

On transfer, further historical data were obtained. It developed that the patient had been excessively dependent throughout his life, first on his mother and then on his wife. His compliant behavior also characterized his relations with his brother, in whose pharmacy he had been employed for many years. Although overworked and underpaid, he suppressed his resentment. Even this flimsy work adjustment had been recently threatened by his brother's apparent lack of interest in having him continue to work.

After transfer, it was clarified that the major source of the patient's depression was his feeling that he had been "given up." He interpreted the use of acetylsalicylic acid (aspirin) as a palliative, meaningless gesture. It was further evident that the waning of the staff's interest was especially significant to this most dependent man. In addition, the depression was accentuated by his pessimism about working out a continuing relationship with his brother.

On the psychosomatic unit a program of generous and enthusiastic attentiveness was projected and carried out. Medication was changed from acetylsalicylic acid to other drugs to which the patient could link a more positive meaning. Paraaminobenzoic acid, which has favorably influenced the course of illness of some patients with dermatomyositis, was given. The patient's wife was allowed to visit him at any time of the day. Within a short period of time, the depression lifted, the progressive downhill course reversed, and the patient was ultimately discharged in an ambulatory condition.

Comment.—This example has certain similarities to case 1. Like that case, case 7 demonstrates the definite deleterious effect on the clinical course of an apparently intangible factor. In this instance, it was the attitude of the medical personnel. There is a quantitative difference from case 1 in that this patient did not appear as definitely to be trending to a fatal outcome. Also, he seemed incapable of obtaining satisfaction of his personality needs in his relations with other patients. He needed the explicit demonstration of interest by those taking care of him. A program was developed that included the needed patient-personnel relationship, a utilization of understanding of the emotional as well as the pharmacological meaning of drugs, and reestablishment of his relationship with his wife. These maneuvers were effective in alleviating the depression, and thus favorably influenced the course of the patient's disease.

RELATIONS BETWEEN STAFF MEMBERS

The following cases illustrate instances in which the development of conflictual feelings among various members of the ward staff had significant effect on the clinical course of individual patients.

CASE 8.—A 13-year-old girl with an active peptic ulcer had been admitted to the unit for further evaluation of psychological aspects of her illness and for further planning of therapy. Shortly after her admission, she manifested a need to seek demonstration of affection and attentiveness toward her by women. One of the ward nurses in an unplanned way

began to gratify such needs. This maternal attention was followed by diminution in the complaints of epigastric pain. This fact, plus the suggestions in the personal history that marked frustration of dependency and protective needs characterized her infancy, led to the plan to foster this nurse-patient relationship as a substitute gratification of these emotional needs. Initially, this had the desired effect of improving the patient's general attitude and of alleviating the gastric complaints. In a short time, however, the patient's dependent attachment to her nurse became so intense that she resented even her going off duty.

To complicate this, although all of the other nurses by this time were interested in the patient, they felt excluded because of the special therapeutic involvement of the first nurse. As a consequence, they did not attempt fully to replace her maternal attentiveness when she was off duty. In addition, the resentment that the other nurses felt at being excluded was in part channeled into hostility toward the first nurse, who, thus developing mixed feelings about her singular role, became less generous toward the patient. The results were a resurgence of complaints by the patient of pain and vomiting and the onset of extreme hostile and provocative behavior toward all personnel. This promoted a further rejecting attitude, and the situation became quite disturbed. However, the mistake in planning that had brought the focusing of such responsibility on one nurse was eventually recognized. The first nurse was relieved of her specific responsibility, with the other nurses to share in the functions originally served by only the one. The major psychotherapeutic activity was carried on by a woman caseworker.

Comment.—Although temporarily harmful effects on the course and management of this patient's illness occurred as a result of a nursing staff conflict, at least two beneficial results accrued to the management of the patient. Through clarification of the interpersonal dynamics in the current situation, the patient and her physician obtained a further understanding of past life situations mimicking the present, and clearer planning for rearrangement of the home conditions was possible. Also, the need for a constant, regular relationship—free of rivalry among other women—was underlined, and a therapeutic relationship was established with a woman caseworker.

The following case example demonstrates some detrimental effects on the course and management of one patient's illness resulting from discord in the relationship of her physician with the consulting staff.

CASE 9.—A 29-year-old woman had been admitted to the medical service with a primary diagnosis of hypoparathyroidism. Her chief complaints were (1) lifelong hyperirritability and hyperexcitability; (2) episodes of right upper quadrant pain with nausea and vomiting for nine years; (3) attacks of tetany since a thyroidectomy eight years before; and (4) sporadic attacks of loss of consciousness for the same length of time. She was given tachysterol (AT-10), calcium, and vitamin D, although her serum calcium and phosphorus readings were actually within normal range. Because the picture was a generally confusing one and because it was thought that more efforts should be made to understand the psychological factors involved, she was transferred to the psychosomatic unit.

Initially, the pharmaceutical regimen was continued, and diphenylhydantoin (dilantin®) sodium was also added because of the occurrence of two attacks of loss of consciousness with falling. For the first 10 to 12 days, she had headache, anorexia, vomiting, tetany, intractable coughing, anxiety, and tearfulness. In view of the repeatedly normal calcium and phosphorus readings in the serum, it was deemed advisable to determine the minimum drug dosage needed for relief of the tetany symptoms as well as of the other symptoms. The attempt was made to reduce the dosages, but this was strenuously resisted and resented by the patient, and there was an increase in all her symptoms. In the process of this activity, her physician came also to resent her. Gradually, however, she became more accepting of her physician's interest, and his attitude became more positive. With this, her symptoms markedly diminished, and it was possible to decrease slightly the dosage of her medications.

At this point, a staff conference was held, at which were present five of the consulting staff physicians, all of whom the patient's physician was eager to impress. They expressed the opinion that the clinical picture was still unclear and that the attending physician had been remiss in not pursuing the plan of decreasing and perhaps abolishing the antitetany medication. This was based on firm ground, since it seemed possible, even likely, that the tetanic seizures were mainly manifestations of conversion hysteria.

However, the attending physician felt attacked by the criticism, and also felt that the painful efforts he had expended in establishing a relationship with his patient had not been recognized. His discomfort interfered with a proper grasp of the advice and was also reflected in a resurgence of hostility toward the patient. Instead of the antitetany medications being gradually withdrawn, all medications were discontinued. The patient responded with anxiety and hostility to this maneuver and entered several days of protracted nausea and vomiting and repetitive carpopedal spasms. Her reactive hostility was so great that several weeks passed before any semblance of trust in her physician returned. During this period, she won the sympathy not only of the other patients, but also one of the ward maids who surrepetitiously brought her acetylsalicylic acid. This discord postponed the diagnostic and specific therapeutic work which, when eventually completed, left no doubt that the primary illness was a hysterical character disorder. She had mild hypoparathyroidism, manageable by dietary methods alone. The major factor in the tetanic seizures and the lapses of consciousness was a psychological one.

Comment.—This case is a dramatic example of the untoward effects on the symptoms of illness, arising out of the hostility of the physician toward his patient. Whether or not the various difficulties in this problematical patient could have been avoided is open to question. However, the experience of the case underlines the advisability of candid exchange of thoughts between the attending physician and the consulting physician. It has perhaps special significance for the psychiatric consultant who has the task of abstracting the psychological data and formulating a workable plan of action for the practitioner. Lack of awareness of the latter's own involvement in the problem may bring undesirable results.

SUMMARY AND CONCLUSIONS

This paper is meant to be basically a descriptive one. No actually new ideas or explanations have been formulated. Indeed, as stated originally, one of our aims has been to demonstrate that despite the incompleteness of our present knowledge about the interrelations between psychological and physiological processes, the clinician can effectively apply logical psychotherapeutic principles in the course of medical management. It has been deemed to be of some importance to state this general implication, because the existing gaps in our understanding can motivate a kind of therapeutic nihilism. On the one hand, the personality problems of physically ill patients can be interpreted to be so closely consequent to the somatic process as to be regarded as virtually unmanageable in themselves. Case 7, that of the man with dermatomyositis, exemplifies an instance in which this view took initial precedence. On the other hand, the recommendation may be that the only fruit-

ful attack on a personality problem would be "intensive psychotherapy." In actuality, the realistic limitations to this may be so prominent that the recommendation means effectively an absence of psychotherapeutic activity.

By and large, the description of the changes in the clinical status of patients in response to the vicissitudes of residence on a medical ward must speak for themselves. If there is any uniformity among the various case experiences, it probably pertains to the "ordinary" nature of the disturbing happenings: the death of another patient; the fluctuations in the levels of interest of physicians; the waxing and waning in the intensity of the personal care by the nurses; the automatically formed friendships between patients, and so on. If any of the instances seem unusual or excessively dramatic, it is surely an error in presentation, not fact. There is a certain value in illustrating the undesirable things that can happen in connection with various events, lest an unwarranted concept persist that the hospital atmosphere is psychologically neutral. Our experience indicates, however, that the harassed clinician need not regard these demonstrations of the instability of the psychological environment of the hospital only as something more about which to worry. Deserving greater emphasis is the point that such difficult-to-prevent strokes of fortune have the potentiality of being turned to advantage, both diagnostically and therapeutically.

Although there are many unknowns in the area of the interrelation between emotional and physical processes, the currently available knowledge of these mechanisms may be utilized advantageously in understanding and treating the physically sick patient. Abstracts of nine cases are included in this report, and a discussion is presented at the conclusion of each abstract to illustrate the manner in which this interrelation has application to the hospitalized patient. It is misleading and indeed erroneous to consider the hospital a psychologically neutral environment. The close interpersonal relationships that develop while the patient is in the hospital may significantly influence the course of his illness. This influence may be advantageous or deleterious. In either event, by observing the phenomena that occur in the psychologically dynamic hospital environment we are given a better opportunity to understand the emotional factors in disease processes. In addition we gain useful insight into these mechanisms as they apply to the individual patient who is under our care. This added knowledge of the patient with his illness enables us to construct a more favorable total therapeutic program.

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PENICILLIN ANAPHYLAXIS, NONFATAL AND FATAL REACTIONS

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This paper deals with the problem of immediate, anaphylactic, and, at times, fatal reactions from penicillin. We shall not discuss other types of allergic manifestations. The episodes to be reported here are those that occur immediately after the administration of penicillin and consist of an acute allergic (atopic) reaction, manifested by any or a combination of the following symptoms: urticaria, angioneurotic edema, asthma, emphysema, labored breathing, shock (with profound fall of blood pressure), cyanosis, and unconsciousness. There is evidence that, in persons in whom the reaction is of this type, a true atopic or anaphylactic type of sensitivity has developed as a result of repeated administration of penicillin, that circulating antibodies to this drug have been produced, and that there is the capacity to give an immediate wheal-ing skin reaction to scratch or intradermal tests.

Anaphylactic reactions are profound, dangerous, and even fatal. They are also preventible in most instances. We feel that such untoward reactions are on the increase, probably because an increasing segment of the population has had the opportunity to become sensitized as a result of repeated exposure to penicillin.

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PREVIOUSLY REPORTED CASES

The current literature contains reports of a fair number of nonfatal reactions of this type. From accounts of colleagues and from other discussions, we are certain that these cases represent only a small fraction of the anaphylactic reactions that actually occur. We shall not attempt to review all the reports of nonfatal cases but shall merely cite representative published histories to illustrate varying features of this type of reaction.

Burleson [1] describes the occurrence of shock, a blood pressure of 50/20 mm. Hg, choking, weakness, generalized itching, and wheezing in a 40-year-old man 15 minutes after he received an intramuscular injection of 200,000 units of crystalline procaine penicillin. Diphenhydramine (Benadryl) was given intravenously, and recovery was complete in a few hours. Subsequent inquiry indicated that he had had previous injections of penicillin. Intradermal tests made later with 0.4 cc. of a solution containing 200,000 units of penicillin per cubic centimeter resulted in a marked delayed reaction. The results of the immediate response are not clear. A moderate episode of angioneurotic edema and shock is described by Wilson [2] in a 57-year-old man who received 300,000 units of aqueous procaine penicillin G. This man had a history of receiving injections of penicillin for the previous 10 months; the last injection that did not produce a reaction was given about three months prior to the one that did cause a reaction. A skin test was not

made, and the report does not mention the presence or absence of an allergic history. Farber and Ross [3] report on six patients with anaphylactoid reactions to penicillin or streptomycin. The type of penicillin used is not mentioned, and the question of skin tests is not referred to. They believe that the concomitant use of diphenhydramine hydrochloride, 10 to 20 mg. administered intravenously, prevents reactions.

Some reports that claim anaphylactic reactions to have been present, include features that make the nature of anaphylaxis somewhat questionable. O'Donnovan and Klorfajn [4] reported a patient in whom administration of a penicillin spray resulted in dermatitis with vesicles. An intradermal test with 0.2 cc. of a solution containing 4 units of sodium penicillin per cubic centimeter caused a positive reaction. A subsequent injection of 15,000 units of penicillin caused a reaction that was interpreted as anaphylactic, although it lacked some features of this type of hypersensitivity. Desensitization was accomplished by the use of large doses of penicillin orally. Restlessness, labored breathing, cyanosis, and unconsciousness occurred in an 18-month-old infant [5] who received the fourth injection of 40,000 units of penicillin in a series in which injections were given every 12 hours. Caffeine, epinephrine, and artificial respiration were used; the infant recovered in a few hours. There was no history of previous penicillin administration. While the symptoms speak for an anaphylactic type of response, the time of the reaction is not typical. Cormia and others [6] describe a patient in whom acute syncope followed an injection of penicillin by a few minutes. The patient had not been given penicillin previously, and results of an intradermal skin test were negative. The details do not satisfy the criteria of an anaphylactic reaction.

Administration via the hypodermic route is not a requisite for the production of an anaphylactic reaction. Everett [7] describes two patients who experienced such symptoms from penicillin that was instilled in the sinuses. One was a 57-year-old man who had had a number of injections of the drug as well as several sinus instillations over a period of years. The instillation producing the reaction given five weeks after the previous instillation consisted of 30,000 units of crystalline penicillin G. Dyspnea, wheezing, shock, and loss of consciousness followed and lasted 3 hours. Three months later, the same man was given an intramuscular injection of 300,000 units of crystalline procaine penicillin G in peanut oil with 2% aluminum monostearate. Within 15 minutes, severe shock ensued. The second patient, a 50-year-old man, experienced itching of the skin and severe asthma immediately after 30,000 units of penicillin had been instilled into the antrum. This man gave a history of allergy and emphysema of many years' duration and had received repeated intramuscular and intranasal injections of penicillin. Once, after taking penicillin orally, he had had temporary itching of the skin, and, preceding the anaphylactic dose, he experienced itching of the skin after using an aerosol of the drug. No skin tests were recorded in either of these two patients. Leibowitz and Schwartz[8] report the case of a 58-year-old man in whom marked dyspnea, choking, cyanosis, and semiconsciousness developed immediately after he had used an aerosol preparation containing 30,000 units of penicillin per cubic centimeter. This patient was a chronic asthmatic with many allergies (not including fungi) who had received treatments of penicillin aerosol for five weeks. The three treatments prior to the one producing the anaphylaxis were followed by asthma several hours later. Some time after the anaphylactic reaction, an intradermal test made with a solution containing 1,000 units of penicillin per cubic centimeter produced a marked local and a constitutional reaction consisting of dyspnea, wheezing, and cyanosis.

Fatal reactions that can be ascribed to penicillin anaphylaxis have not been reported frequently. Waldbott [9] described the case of a 39-year-old asthmatic woman who died immediately after she was given 50,000 units of penicillin intramuscularly. She was sensitive to various allergens and had been receiving desensitization treatment. Over a period of one and one-half years, she had also been given a number of penicillin injections. Six weeks prior to the fatal dose, she received an injection of penicillin that resulted in urticaria a week later. The report does not indicate that a penicillin skin test was made. An autopsy was not performed. A 67-year-old man [10] had received monthly injections of penicillin for nine months. A similar dose of 300,000 units of procaine penicillin given on his ninth visit resulted immediately in collapse, unconsciousness, and cyanosis. He recovered in a short time and was discharged 4 hours later. It was assumed that the procaine was probably responsible for his reaction, and, six weeks later, 300,000 units of crystalline penicillin G was administered. Immediately the following symptoms occurred in rapid succession: nausea, retching, gasping respiration, collapse, swelling of the tongue and lips, undiscernible pulse, cyanosis, and frothing at the mouth. He died 10 to 15 minutes after the injection. A history of previous allergy or a skin test with penicillin was not mentioned. An autopsy showed swelling of the tongue and lips, evidence of old coronary disease but no recent occlusion, marginal emphysema, basal congestion of the lungs, and petechial hemorrhages beneath the posterior visceral pleurae.

Higgins and Rothchild,[11] report an anaphylactic death in a 57-year-old man who received 300,000 units of procaine penicillin G intramuscularly as part of a postoperative routine. The symptoms occurred within 1.5 minutes after the injection and consisted of cyanosis and coughing followed by tonic muscular spasms, labored breathing, and unobtainable blood pressure. Administration of atropine intravenously, epinephrine intracardially, amino-

1. Burleson, R. J.: Anaphylactoid Shock Due to Penicillin, J. A. M. A. **142**: 562 (Feb. 25) 1950.
2. Wilson, R. K.: Anaphylactic Reaction from Penicillin: Report of Case, J. M. A. Alabama **21**: 291 (April) 1952.
3. Farber, J. E., and Ross, J.: Antibiotic Anaphylaxis, M. Times (Jan.) 1952.
4. O'Donnovan, W. J., and Klorfajn, I.: Sensitivity to Penicillin: Anaphylaxis and Desensitization, Lancet **2**: 444 (Sept. 28) 1946.
5. Yoder, J. G., and Lysander, H.: Anaphylactic Reaction from Penicillin, J. Christian M. A. **27**: 97 (March) 1952.
6. Cormia, F. E.; Jacobsen, L. Y., and Smith, E. L.: Reactions to Penicillin, Bull. U. S. Army M. Dept. **4**: 694 (Dec.) 1945
7. Everett, R.: Anaphylactic Reactions from Local Use of Penicillin: Report of Two Cases, J. A. M. A. **146**: 1314 (Aug. 4) 1951.
8. Leibowitz, H., and Schwartz, E.: An Unusual Reaction to Penicillin: A Case Report, Ann. Allergy **8**: 668 (Sept.-Oct.) 1950.
9. Waldbott, G. L.: Anaphylactic Death from Penicillin, J. A. M. A. **139**: 526 (Feb. 19) 1949.
10. Thomson, W. O.: Sudden Death Following an Injection of Penicillin, Brit. M. J. **2**: 70 (July 12) 1952.
11. Higgins, G. A., and Rothchild, T. P. E.: Fatal Anaphylactic Shock From Procaine Penicillin, New England J. Med. **247**: 644 (Oct. 23) 1952.

phylline intravenously, and positive pressure artificial respiration was of no avail; the patient died 10 minutes after the penicillin was administered. The history revealed that he had received procaine penicillin G in the same hospital two years before without any unusual reactions.

It has been our feeling for some time that these isolated case reports do not represent the true incidence of fatal reactions. We know of at least two deaths from penicillin that have not been recorded in medical literature. Undoubtedly there are others. As an example of such trends an editorial [12] in the *Journal of Allergy* is worthy of note. At a meeting of the New York Allergy Society some time ago, Dr. Sheppard Siegal reported two severe nonfatal anaphylactic reactions and one fatality following injections of penicillin. In the discussion among the members present, it developed that they had personal knowledge of three other fatal anaphylactic reactions and many other alarming but nonfatal reactions to penicillin.

The cases recorded here * illustrate many phases of the subject of anaphylactic episodes from penicillin. For the sake of brevity only the essential details are given.

REPORT OF CASES

CASE 1.—A 27-year-old woman was seen by us in 1949. She gave a history of hay fever with slight asthma having occurred each summer for the past 17 years. Allergy studies showed strong reactions to ragweed and grass pollen, cat and dog epithelium, and molds, including Penicillium. For three seasons she was given desensitizing injections of the extracts of the pollen and the molds in which the Penicillium genus was included. The results were satisfactory, and no constitutional reactions occurred. In April, 1952, she consulted the family physician because of a sore throat and was given an injection of penicillin (type and amount not stated). In a few minutes, urticaria, shock, and unconsciousness developed. Oxygen was administered and the patient was hospitalized; she recovered in a day or two. When the patient related this episode to us, we questioned her about previous administrations of penicillin and her reactions to them. She informed us that she had been given penicillin on a number of occasions; the one prior to the one described resulted in some urticaria a few minutes after the injection. According to the patient, the physician believed that that reaction could be disregarded. On May 6, 1952, about a month after the anaphylactic reaction, we performed scratch tests with both crystalline penicillin G and crystalline penicillin O. These showed strong whealing reactions within a few minutes. The patient was warned that penicillin could be fatal to her. The desensitizing injections of the pollen and mold extracts were continued uneventfully until September.

CASE 2.—A 25-year-old man was referred to us. We saw him on July 10, 1952, and were requested to determine which antibiotics he could take safely. His history indicated that he had had frequent infections of the mouth and throat for which he had received antibiotics, including penicillin. Three or four months prior to consulting us, he was given an injection of penicillin (dose and type not stated), and, within a few minutes, he had a violent reaction consisting of urticaria, asthma, and unconsciousness. He was seriously ill for several hours and was hospitalized for several days. Further inquiry elicited the information that three to four months prior to the anaphylactic reaction he had had several delayed reactions that began from one to several days after a particular injection. The patient believed that he was also allergic to other antibiotics and ascribed vague symptoms to that cause. There was also a history that he had had moderate hay fever during June and July for several years. Results of scratch tests with penicillin G and O were strongly positive. Reactions to scratch tests with aureomycin, oxytetracycline ("terramycin"), chloramphenicol, streptomycin, dihydrostreptomycin, polymixin, and procaine were negative. Reactions to grass pollen were very strong, but those to all the molds, including Penicillium, were negative by scratch and intradermal tests.

CASE 3.—A 52-year-old man was referred to us and consulted us on April 3, 1950, because of persistent urticaria and angioneurotic edema. It was suspected that his complaint might be due to a reaction to penicillin, but, because of the persistence of the symptoms, there was some doubt of this relationship. The history given was that in November, 1948, 10 days after the inhalation of three cartridges of penicillin powder, some urticaria developed as well as angioneurotic edema and arthralgia. For a period of seven months, these manifestations recurred on the average of two to three days a week. From June, 1949, to February, 1950, he had no hives. During February, 1950, he had two injections of procaine penicillin; a week later, lesions of urticaria and angioneurotic edema developed. Some time after that episode, both procaine and acetylsalicylic acid were administered during the course of a tooth extraction. The next day the urticaria became worse, and the rash was accompanied by vesicles. He gave the further history that, during his first episode of urticaria, the ingestion of acetylsalicylic acid intensified the lesions, whereas during the free interval (between June, 1949, and February, 1950) acetylsalicylic acid produced no ill effects.

Both episodes were suspected to be the common delayed "serum sickness" type of reaction in which results of skin tests are usually negative; therefore, it was explained to the patient that, while the history left little doubt that the reactions were due to penicillin, skin tests would be of no help. To emphasize this point, a scratch test was made using procaine penicillin. Much to our surprise and embarrassment an immediate and very large whealing reaction ensued. The response to crystalline penicillin G was similar, while that to procaine alone was negative. On May 5, the patient returned; the urticarial lesions were still present but not so severe as previously. Since his previous visit, we had obtained some crystalline penicillin O. Scratch tests with the latter and crystalline penicillin G gave equally large reactions. Intradermal tests using 0.01 cc. of dilutions varying from 0.2 to 200 units of crystalline penicillin G and O per cubic centimeter gave reactions down to and including the 2 unit. The patient was advised that any subsequent administration of penicillin might be extremely dangerous.

CASE 4.—A 47-year-old woman consulted us complaining of migraine, simple headache, nasal stuffiness, and angioneurotic edema. In the course of taking her history, it was learned that some time ago an injection of penicillin produced immediate urticaria. Scratch tests made with penicillin G and penicillin O gave equally marked immediate whealing reactions.

CASE 5.—A 27-year-old Negro soldier reported to the dispensary because he had a cold and a temperature of 101 F. The corpsman gave him an intragluteal injection of one cc. of procaine penicillin in peanut oil with aluminum monostearate. Ten minutes after the injection, the patient vomited, became dyspneic, complained of dizziness, and collapsed. This was followed by tonic convulsions, unconsciousness, cyanosis, and impalpable pulse. Ammonia inhalations and artificial respiration were of no avail, and he was pronounced dead 20 minutes after the injection. There was no history of previous allergy. A history of previous administrations of penicillin was not available. Postmortem findings included cyanosis of the lips, puffiness of the eyes and face, mucus in the tracheobronchial tree, acute congestion of the lungs, and no sign of embolism. Changes found on microscopic study were moderate congestion of the lungs, spleen, and kidneys, some petechial hemorrhages in the lungs, and marked sickling of red cells.

CASE 6.—A 28-year-old white soldier was under treatment for a shell fragment wound of the right elbow. On Feb. 23, 1944, at 2 p. m., the patient was examined, and a diagnosis of either thrombosis of the axillary vein or gas infection

12. Editorial: Fatal Allergic Reactions to Penicillin, J. Allergy **23**: 383 (July) 1952.

* The nonfatal case reports are from the practice of two of us (S. M. F. and A. R. F.) and the five fatal cases are from the records and materials on file at the Armed Forces Institute of Pathology and have been analyzed by one of us (C. F. R.).

was made. Intravenous administration of penicillin, 100,000 units in 1,000 cc. of glucose and isotonic sodium chloride solution, was started (exact time not noted). At about 4:30 p. m., a cold sweat, cyanosis, weak pulse, and a blood pressure of 60/20 mm. Hg developed. Plasma, morphine, and oxygen were administered, but the soldier died at 6:30 p. m. The type of penicillin given was not noted on the record. There was no history of previous penicillin therapy and no history of other allergies. Postmortem microscopic examination disclosed that the lungs were emphysematous and showed slight edema fluid; there was an engorgement and congestion of the blood vessels; the portal spaces of the liver were infiltrated with many lymphocytes; and the right axillary vein was thrombosed. The diagnosis was axillary vein thrombus and anaphylactoid shock.

CASE 7.—A 23-year-old white nurse gave herself an injection of 200,000 units of crystalline sodium penicillin G in the right thigh (no evidence of entering blood vessel) sometime after 2:30 a. m. on Dec. 26, 1950. Two minutes after the injection, she complained of shortness of breath, and shortly thereafter she slumped to the ground. On examining the patient at 4 a. m., the intern found her cyanotic with six to eight respirations per minute and inaudible heart beat. Therapy included administration of caffeine, nikethamide (Coramine), epinephrine, artificial respiration, and oxygen; she died at 4:30 a. m. The record indicated that the patient had been given penicillin orally in May, 1950, for a condition noted as a cold with musical rales. The patient had recently noticed a rash on her face. On postmortem, a pink, frothy fluid was found in the bronchi and bronchioles. The subcutaneous tissue lateral to the upper third of the trachea was moderately edematous. The lower pulmonary lobes showed congestion and punctate hemorrhages, and the alveoli were markedly edematous. The thymus weighed 15 gm. There was focal collection of lymphocytes in the liver. The spleen and kidneys were congested. The postmortem blood findings were as follows: red blood cells, 5,890,000; white blood cells, 29,400 per cubic millimeter; hemoglobin, 116%; eosinophils, 19%; stab cells, 6%; segmented cells, 51%; lymphocytes, 22%; erythroblasts, 31 per 100; and blood sugar 80 mg. per 100 cc. Penicillin assay of blood serum was negative.

CASE 8.—A white man, 54 years of age, was given 800,000 units of penicillin (type not identified) by his family physician in October, 1952. Within 15 seconds, difficulty in breathing, cyanosis, and collapse occurred. Epinephrine, 1 cc. subcutaneously, and artificial respiration were of no help. The patient died in two or three minutes. The attending physician was certain that he had drawn back on the syringe. He gave the additional information that the patient had had asthma for 10 years, that the last dose of penicillin prior to the anaphylactic dose was given two years before, and that the patient had received 20 injections of penicillin previously without any untoward result. The gross and microscopic postmortem examinations showed emphysema, congestion of all pulmonary vessels, slight thickening of alveolar walls, moderate cardiac hypertrophy with hypertrophy of muscular fibers, congestion of capillaries of renal cortex, and slight congestion of meninges.

CASE 9.—A 48-year-old Negro sailor received a 300,000 unit intramuscular dose of penicillin G on June 2, 1952, for urethritis. Immediately, he developed generalized pruritis, followed by nausea, vomiting, collapse (blood pressure 60/40 mm. Hg), convulsions, pulmonary edema, and musical rales in the chest. A lumbar puncture showed spinal fluid under normal pressure and no blood present. The symptoms continued, and, despite energetic medication consisting of intramuscular, intravenous, and intracardiac administration of epinephrine, aminophylline intravenously, and calcium gluconate, ephedrine, and oxygen administration, the patient died five and one-half hours after the penicillin injection. The history indicated that the patient had used penicillin ophthalmic ointment for conjunctivitis in February, 1952, with no known reaction. A hospital corpsman, however, volunteered the information that the patient once told him that, while aboard another vessel, he had received penicillin orally and had suffered vomiting and pruritis afterward.

The postmortem showed that the lungs were dark purplish-red, noncrepitating, and edematous and that there was congestive hyperemia and atelectasis. The small and large intestines were congested and showed some hemorrhages. There was mild congestion of the liver, and the spleen showed edema of the red pulp.

COMMENT

The published case histories and the cases reported in this paper represent only a small fraction of the immediate severe reactions and anaphylactic deaths from penicillin. This is obvious from the information gained at meetings and from discussions with colleagues. It is understandable that many physicians who are not accustomed to writing medical articles or who do not wish to publicize their unfortunate accidents will fail to report such cases. It is also obvious that failure to place such events on record robs others of the opportunity to benefit and, thereby, to prevent similar occurrences. It is suggested that such cases, fatal and nonfatal, be reported with all relevant details to a central agency, such as the American Medical Association, so that all related reports may be compiled and classified and be useful to others. In case of publication, the physician's name might remain anonymous if he so desired.

From our experience and the experience of others we may begin to construct a composite picture of various phases of this type of anaphylactic reaction to penicillin.

Symptoms and Course.—Immediate constitutional reactions to penicillin present a fairly characteristic picture. In the milder cases, probably urticaria and asthma are the major symptoms, but very few of these milder reactions have been reported. The severe reaction is usually very rapid in onset and occurs usually a few seconds to several minutes after the administration of the drug. Shock, with profound fall in blood pressure, is the most important change. Labored, slow breathing and cyanosis are the rule. Unconsciousness has occurred in most patients, and many have had convulsions. Death occurs within the space of a couple of minutes to two or more hours and appears to result either from shock or asphyxia.

Autopsy Findings.—In some instances, there may be very little of significance found at autopsy, although negative findings, which exclude other causes of sudden death, speak for anaphylaxis. The changes likely to be present are emphysema, edema in the lungs and bronchi, congestion of the lungs with small hemorrhages, and congestion of the spleen and kidneys. One should look for possible embolism and for evidence that the injection was intravascular. In this connection, it is suggested that blood obtained from the heart chambers be tested for antibodies to penicillin by the passive transfer technique.†

Route and Type of Penicillin.—The route of administration of penicillin in the fatal cases reported here and elsewhere was largely intramuscular, although accidental intravenous injection cannot be excluded in every one of these. Severe and near fatal reactions have been described from intranasal instillation,[7] aerosol,[8] and oral [12] administration. There is no reason to believe that penicillin administered by any of the latter routes cannot be fatal. In view of the fact that injection of as little as about 10 units has produced severe constitutional re-

† The authors will make such a test at their own expense if several cubic centimeters of sterile serum are sent to them.

actions, it is not unreasonable to expect that a much higher blood titer can be reached by almost any route. The dose of penicillin may occasionally be a factor, but the evidence warrants the conclusion that any therapeutic dose in such cases may be too much. The type of penicillin has been reported in some cases, while, in many others, no record is available. From the information at hand it is fairly obvious that virtually any type of penicillin is capable of producing such a reaction and that there is cross reaction between various types of the drug. The result of our cross skin testing in four patients with penicillin allergy of the anaphylactic type would indicate that penicillin O cross reacts with penicillin G and is probably as anaphylactogenic. Further work should be done in this phase of hypersensitivity. It is suggested that, in any patient found to be allergic to penicillin, quantitative cross testing should be done with various forms of penicillin. (These studies can also be made using the blood of the patient indirectly in another subject). In none of the patients we studied and in none of the ones reported elsewhere [12] was there indication that procaine allergy was involved. One published fatality [10] can be blamed on the fact that the author reporting it was led to believe that the previous anaphylactic reaction in that patient was due to the procaine moiety of the penicillin.

Previous Penicillin Administration.—The majority of those persons who have had anaphylactic reactions have had a number of injections or other administrations previously, but judging from some of the records such a reaction may follow the first time the drug is administered. Almost always there is an interval of several weeks or longer between the nonreacting and reacting dose. In a number of instances, such as in case 1 of our series, in the case reported by Thomson,[10] and in others,[12] previous immediate and more moderate reactions preceded the severe or fatal ones. While in the majority of cases "serum sickness" reactions did not precede the anaphylactic episode, there is some suspicion that in some instances sensitization may proceed from "serum sickness" to accelerated serum sickness and finally to the immediate type of reaction. This is in line with what was found years ago in the case of induced sensitivity to horse serum. Cases 2 and 3 of our series have features suggesting such possibilities.

History of Other Allergy.—In the series reported by us, four patients definitely had other allergies; two probably were allergic, while the remaining three probably were not. Of the previous cases reported, some were allergic, others were stated not to be so, and, in many, the information was not given. In the group discussed at a meeting of the New York Allergy Society,[12] "a great majority . . . gave a past or family history of allergic disease of the hereditary or atopic type . . . ." It must be emphasized that data of this sort cannot be taken necessarily at face value. In the first place, in many cases there obviously was no inquiry into the allergic history of the family or the patient. In other circumstances, it is impossible to obtain a satisfactory history of allergy from the patient. On the other hand, in a series of constitutional reactions to penicillin that come under the direct observation of allergists, the statistics are likely to be weighted because, in part, it is apt to be a selected group under treatment for other allergy. Very frequently, we encounter situations that indicate that many physicians believe that persons who are allergic to molds and who, because of it, have hay fever or asthma are prone to be allergic to penicillin. Early in the experience with penicillin, we have shown that patients who were highly sensitive to extracts of Penicillium failed to react to a penicillin skin test and were no more likely than others to develop allergic manifestations from this drug. In our case 1, it will be noted that, in spite of a respiratory allergy due in part to molds including Penicillium, numerous injections of penicillin failed to produce allergic responses until the patient became sensitized to penicillin by these injections. In cases 2 and 3, in spite of marked sensitivity to penicillin, the fungi failed to produce allergic skin reactions. It would appear that the antigen in the Penicillium mold causing hay fever and asthma by natural inhalation is not the same as the antigen in penicillin that is responsible for immediate or delayed reactions. Fungus infection and this type of penicillin sensitivity also appear to be unrelated.

Skin Test.—It is practically a certainty that a skin test will be positive in all those persons who react anaphylactically to penicillin. The reaction has been positive in our series, and it has been positive in the hands of others. In many instances, of course, the test was not made, and, in one or two cases, the interpretation was faulty. The test is done by placing a drop of a solution of crystalline penicillin (50,000 to 100,000 units per cubic centimeter) on a scratch or by placing a speck of the powdered drug on a scratch and dissolving it with a drop of water or sodium chloride solution. A whealing, itching reaction occurs in 5 to 20 minutes. If reaction to the scratch test is negative, an intradermal test may be made using about 0.01 cc. of a solution containing 100 units per cubic centimeter. If the reaction is negative, a 1,000 unit concentration may be used; however, in the vast majority of persons a 10 unit concentration should be sufficient to produce a definite reaction. A 1,000 unit concentration may be distinctly hazardous and should not be tried as a test unless reaction to the scratch test is negative. Higher concentrations or much larger volumes may produce false reactions. If the scratch test is not done, the initial intradermal test should be made with a solution no stronger than 10 units per cubic centimeter. If the latter does not cause reaction, stronger solutions may be employed. It should be well understood that an immediate negative reaction to a skin test is no indication that a delayed "serum sickness" type of reaction will not occur.

Prevention of Serious Immediate Reactions.—To prevent serious immediate reactions, several phases of the patient's history should be investigated before administering penicillin. A history of other allergy should make the physician cautious. If the patient has received penicillin previously and if the last administration was not longer than a few days before, the possibility of sensitization, although not common, is always present. If there is a history of previous immediate reactions, such as urticaria, asthma, or any degree of shock, the likelihood of dire consequences from further use of penicillin is considerable. It is now our belief that in any of the above circumstances the patient should be given a preliminary skin test with penicillin before it is administered therapeutically. If the result of the test is unquestionably

positive, administration of penicillin could rarely be justified. Whenever the drug is administered, standard equipment for the treatment of reactions should be at hand and should include at least epinephrine for hypodermic use and aminophylline for intravenous use. It is obvious that self-administration of this drug is hazardous, even if the physician is the patient.

Much has been said of the use of antihistamines as a prophylactic measure. The prevention of delayed reactions with these drugs has no rationale whatever. Antihistamines used prior to the injection could increase the immediate tolerance of the patient, perhaps by a small percentage, but that is far from sufficient to bring a tolerance of 10 units of penicillin up to a tolerance that will allow 300,000 units. Much the same argument can be given for desensitization. It is extremely dubious whether a patient's tolerance could be elevated to that degree. If it could be done, it would take at least several months. One of the soundest methods of preventing situations in which the patient may be allergic to penicillin at a time at which it is badly needed is not to give the medicament if it is not absolutely required. The use of penicillin and other antibiotics for trivial infections and even for noninfectious conditions should be discouraged.

Treatment of Reaction.—At the first sign of an immediate reaction, 0.5 to one cc. of epinephrine in a 1:1,000 dilution should be given intravenously. This should be followed in two or three minutes by a similar dose if no improvement is seen. As soon as the epinephrine has been administered, it would be wise to give aminophylline (3.75 grains or 0.25 gm. in 10 cc.) intravenously. If cyanosis is present, oxygen should be administered. If shock continues, plasma should be administered intravenously if facilities are at hand.

SUMMARY

Severe and even fatal reactions to penicillin are occurring with increasing frequency. The major symptoms are urticaria, asthma, shock, cyanosis, and unconsciousness. Probably any type of penicillin (and to a lesser extent, other antibiotics), administered by any route, can produce this type of reaction. This type of sensitivity (unlike the delayed urticarial syndrome) is usually induced by repeated courses of penicillin and occurs more frequently in those persons who are subject to other allergies. Penicillin allergy has no relation to the hay fever or asthma produced by the inhalation of spores of the Penicillium mold. The immediate whealing skin reaction obtained with the scratch or intradermal test is diagnostic of the anaphylactic or atopic type of penicillin sensitivity.

For the optimum prevention of this serious allergic hazard the following recommendations are suggested: Penicillin should not be given for trivial conditions. Before the drug is administered, the patient should be questioned about his allergic status, his previous use of penicillin, and any unusual reactions to it. It is recommended further that, when more than a few days have elapsed since the previous dose of penicillin, a skin test be made. If the reaction to a skin test is positive, the administration of penicillin should be avoided.

ADDENDUM

Since this paper was written, another fatal case has been reported (Mayer, C. S., and others: Penicillin Anaphylaxis, *J.A.M.A.* **151:**351 [Jan. 31] 1952). Also, an immediate death caused by the inhalation of penicillin powder has come to our attention.

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CORTISONE IN TREATMENT OF RHEUMATOID ARTHRITIS

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and
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In selected cases of rheumatoid arthritis, cortisone, hydrocortisone (compound F), or corticotropin (ACTH) can achieve greater antirheumatic results than any other single measure presently available. The usefulness of these hormones in controlling the active rheumatoid process is, however, limited in some patients, principally because of certain undesirable physiological effects that may result. Consequently, physicians and patients have asked repeatedly whether cortisone administration is a practical therapeutic measure for rheumatoid arthritis or whether in this disease cortisone should be used for investigative purposes only. Initially, its use was unquestionably investigative, and much still remains to be learned about its effects. Nevertheless, it is now our opinion that cortisone can be employed as a practical measure of treatment, regardless of whether that treatment is considered investigative, if the physician will expend the time and effort necessary for the proper selection and management of patients. Several rheumatologists who have recently expressed themselves on this subject appear to be in essential agreement with this opinion.[1] Our current concept of the manner in which these substances may be employed to best advantage in this disease is discussed in this communication. For the sake of convenience, reference will be made to cortisone acetate (hereinafter called cortisone), with which we have had more experience, because of its availability and convenience of administration, than we have had with the other two substances. Nevertheless, the remarks generally apply with equal validity to corticotropin or to hydrocortisone, if due regard is given to differences in doses, methods of administration, and reactivity of the patient's adrenal cortex.

PROGRAMS OF TREATMENT

The use of cortisone is recommended for some but not all rheumatoid patients, just as insulin is advised for some but not all patients with diabetes mellitus and

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bishydroxycoumarin (Dicumarol) for some but not all patients with thrombophlebitis. In each instance simpler treatment may suffice. Yet, these various measures are of unquestioned value in selected cases.

At present, three principal programs of treatment for rheumatoid arthritis are available: (1) the program of conservative measures, which consists mainly of the use of physical and occupational therapy, salicylates, adequate extra rest, attention to other medical problems, a well-balanced diet calculated to maintain proper weight, protection of joints from overuse and from malposition by regulation of the patient's activities and by the use of appropriate orthopedic measures, roentgen therapy to the spinal column in some cases of rheumatoid spondylitis, and instruction to the patient regarding the nature of his disease and the purposes, possibilities, and limitations of various means of treatment; (2) the use of cortisone; (3) the use of gold salts (chrysotherapy).

At the start of treatment, for most patients we prefer to use the conservative program, which is adequate in some cases of mild or moderate severity and even in some cases of greater severity. If conscientious application of these conservative measures does not provide sufficient control of the active rheumatoid process after a reasonable length of time (several weeks or a few months), we resort to the additional use of cortisone, unless it is contraindicated. Currently, we reserve the use of gold for patients who require more than the conservative program but who are not suitable for treatment with cortisone because of contraindications or a poor tolerance to cortisone in effective doses.

SELECTION OF PATIENTS

The rheumatoid patient selected for treatment with cortisone should fulfill the following qualifications: (1) the rheumatoid process should be active, as evidenced by a systemic reaction, with secondary fibrositis and a demonstrable rheumatoid synovitis (cortisone suppresses the active manifestations of rheumatoid arthritis but does not repair damaged cartilage or bone, ankylosis, or long-standing fibrous contracture); (2) an adequate trial for periods ranging to several months of conservative measures should have yielded inadequate control of the active manifestations; (3) the benefits that may reasonably be expected from the use of cortisone should exceed the risk and expense of its administration.

Certain conditions may be affected adversely by the administration of cortisone: (1) active tuberculosis and other infections; (2) psychoses or severe psychoneuroses (or a history of these); (3) cardiovascular or renal disease, including hypertension, myocardial insufficiency, renal insufficiency, and a tendency to thromboembolic phenomena; (4) diabetes mellitus; (5) osteoporosis; (6) peptic ulcer; (7) convulsive disorders. Active tuberculosis and psychoses are considered absolute contraindications to the use of cortisone in the prolonged treatment of rheumatoid arthritis. The remainder are relative contraindications only, and the need for cortisone must be evaluated with respect to the increased risk for patients who have these complications. Thus, a patient who has mild rheumatoid arthritis but severe diabetes mellitus or an active peptic ulcer may not be judged a good candidate for treatment with cortisone. On the other hand, if the rheumatoid arthritis is severe but the diabetes mild or the ulcer inactive, a trial of the use of cortisone may well be justified, provided the physician and patient recognize the extra risk involved and take appropriate measures, for example, the prophylactic use of a diet and antacids for the patient who has a peptic ulcer.

The administration of cortisone has resulted in increased susceptibility to or increased severity of a variety of infections induced experimentally in animals.[2] Nevertheless, clinical investigators who have had considerable experience in the treatment of rheumatoid patients with cortisone have noted little or no increase in the incidence or severity of infections, other than tuberculosis, in such patients.[2a] In view of the experimental evidence, however, it would seem desirable to wait until acute or subacute infections have been controlled by appropriate measures before starting administration of cortisone for the treatment of rheumatoid arthritis. If an acute infection develops during prolonged treatment with cortisone, the dose should remain the same or be increased, if necessary, to supply the body with sufficient adrenocortical hormone to withstand the added stress imposed by the infection. In our experience, certain chronic infections, such as bronchiectasis, chronic sinusitis, chronically infected tonsils, and epidermophytosis, have not been affected adversely by cortisone in doses employed in our rheumatoid patients. Until more experience is gained, other chronic infections characterized pathologically, like tuberculosis, by a granulomatous process (for example, untreated active syphilis, venereal lymphogranuloma, granuloma inguinale, systemic fungus infections, and brucellosis) probably should be controlled before cortisone is given for the prolonged treatment of rheumatoid arthritis to patients who have such infections.

PRELIMINARY PROCEDURES

Examination of the patient for whom the use of cortisone is considered ordinarily requires no unusual measures but consists of the thorough examination that any patient should receive. Special attention is given to the possible presence of any complicating condition that might interfere with the use of cortisone. A complete medical history should be taken; physical examination and such laboratory examinations as urinalysis, determination of the erythrocyte and leukocyte counts, the hemoglobin level, and the sedimentation rate, and a serologic test for syphilis should be performed, and roentgenograms of the thorax and of representative joints should be made. Other laboratory examinations may be indicated by special circumstances; for example, if the patient has a history of diabetes mellitus in the family, a determination of the fasting blood sugar level should be done, or if renal disease is suspected, a determination

1. Boots, R.: The Management of Rheumatoid Arthritis, Bull. Rheumat. Dis. **1**: 9-10 (Jan.) 1951. Boland, E. W., and Headley, N. E.: Results of Long-Continued Cortisone Administration in Rheumatoid Arthritis, California Med. **74**: 416-423 (June) 1951. Traeger, C. H.: Cortisone Therapy of Rheumatoid Arthritis in Everyday Practice, Merck Report **60**: 10-16 (Oct.) 1951. Freyberg, R. H., and others: Problems of Prolonged Cortisone Treatment for Rheumatoid Arthritis: Further Investigations, J. A. M. A. **147**: 1538-1543 (Dec. 15) 1951. Copeman, W. S. C., and others: Observations on Prolonged Cortisone Administration in Rheumatoid Arthritis, Brit. M. J. **1**: 397-403 (Feb. 23) 1952.

2. ACTH and Cortisone in Infection, editorial, New England J. Med. **245**: 75-77 (July 12) 1951.

2a. Proceedings of the Conference on the Effects of Cortisone, Rahway, N. J., Merck & Co., Inc., 1951, pp. 52-53.

of the blood urea nitrogen level should be done. It is especially important that essential details regarding cortisone, its value and its limitations, be discussed with the patient; the importance of following exactly the prescribed dose of cortisone and of returning for reevaluation at designated intervals should be emphasized.

CORTISONE ADMINISTRATION

Route of Administration and Dosage.—Cortisone is usually administered orally or intramuscularly. Studies have shown that the antirheumatic and other physiological effects resulting from cortisone given by the two methods of administration are similar.[3] The duration of action of cortisone given orally is generally about six to eight hours, whereas cortisone administered intramuscularly may exert an effect for 24 to 48 hours or longer. The dose is about the same by either route, although some patients require slightly more cortisone by mouth than intramuscularly. Rare instances in which cortisone given orally failed to produce an antirheumatic response have been reported.[3] Nevertheless, the oral route of administration is the more practical one for most rheumatoid patients.

Division and spacing of the daily oral dose should be individualized. Since orally administered cortisone has a relatively short duration of action, the total daily oral dose of cortisone usually should be divided into three or four parts spaced more or less equally throughout the 24 hour period; for example, a patient whose daily dose of cortisone is 50 mg. may take 12.5 mg. every six hours, or he may obtain as satisfactory results by taking 12.5 mg. on arising and again at noon, at suppertime, and at bedtime, thereby avoiding the necessity of being awakened for a dose. If cortisone is taken three times a day, it usually should be prescribed every eight hours rather than at mealtimes; if no cortisone is taken between supper and breakfast, a period that ordinarily exceeds 12 hours, the antirheumatic effect may wear off during the night. Cortisone generally should not be administered orally in a single undivided daily dose, for example, 50 mg. daily at 8 a. m. The speed and short duration of action of cortisone given orally permit adaptation of individual doses to meet varying requirements during the 24 hour period. Thus, a patient whose symptoms are greater in the morning than at other times may obtain more relief, without increasing the total daily dose, by increasing the dose taken early in the morning or during the night and decreasing correspondingly the dose taken sometime later in the day when his need for cortisone appears to be less.

The effects of intramuscularly administered cortisone usually last 24 to 48 hours. Therefore, intramuscular doses may need to be given only once a day, every other day, or on three days a week, such as Monday, Wednesday and Friday, depending on the dose and other individual circumstances.

Programs of Administration.—Cortisone is given to rheumatoid patients usually by one of two programs: interrupted administration or more or less continuous, prolonged administration. In the interrupted administration method, cortisone generally is given for several or many weeks and then is discontinued for a few weeks until sufficient symptoms occur to justify the use of more cortisone. Then another course is given. Optimal doses and periods of administration depend on the patient's individual requirement. Ordinarily, doses ranging from 50 mg. to 100 mg. per day have been used. Symptoms of cortisone withdrawal usually are minimized if the period of administration does not exceed eight weeks and the total dose does not exceed about 4 gm., although occasionally withdrawal symptoms may occur after administration periods as short as one month. Gradual rather than abrupt reduction of dose also lessens severity of withdrawal symptoms. Sufficient time should elapse between periods of administration to permit the essential disappearance of any side-effects that may have occurred. This method has the potential advantage that less cortisone will be used, and, as a result, undesired physiological effects are less likely to occur and treatment is likely to be less expensive. It may prove useful for patients who are especially prone to hypercortisonism. A relapse quickly occurs, however, in most patients when administration of cortisone is discontinued. Hence, this method of administration now is used less than prolonged administration.

The prolonged administration method consists of the administration of cortisone more or less continuously for a prolonged and often indefinite period. Its purpose is to provide sustained relief of symptoms of active rheumatoid arthritis. In achieving this purpose, care must be taken not to use excessive doses of cortisone that would result in significant hypercortisonism. The dose must be sufficiently low to avoid this, even though submaximal relief may result. Nevertheless, for many patients this plan yields the best results at present. During such more or less continuous, prolonged administration the dose should be tapered off occasionally to determine whether the improvement can be maintained with smaller doses or with no cortisone. Combinations of cortisone with corticotropin, gold, or other compounds are being used investigatively, but discussion of these does not fall within the scope of this paper.

Regulation of Dosage in Prolonged Administration.—Proper regulation of dosage is the most important part of any program of administration of cortisone, especially in prolonged administration. At the start of treatment, we usually give a daily dose of 50 to 75 mg. for moderate or moderately severe cases and 30 to 50 mg. for mild cases or for severer involvement in patients who are likely to be especially susceptible to the effects of cortisone. Only occasionally, and then usually in severe cases, do we use initial doses as large as 100 mg. or more per day. Since 1950, we have not considered it necessary or desirable to start treatment with the large stimulating doses used previously,[4] for example, 300 mg. the first day followed by 100 mg. daily for several weeks. When excessive doses are used, difficulty in management may be encountered later with smaller, maintenance doses. Excessive doses of cortisone may produce mental stimulation and euphoria, which many patients enjoy but which are not sustained when the dose is reduced to

3. Ward, L. E., and others: Clinical Effects of Cortisone Administered Orally to Patients with Rheumatoid Arthritis, Proc. Staff Meet., Mayo Clin. **26**: 361-370 (Sept. 26) 1951.

4. Hench, P. S.; Slocumb, C. H.; Polley, H. F., and Kendall, E. C.: Effect of Cortisone and Pituitary Adrenocorticotropic Hormone (ACTH) on Rheumatic Diseases, J. A. M. A. **144**: 1327-1335 (Dec. 16) 1950.

lower levels. As the stimulation and euphoria disappear, the patient often misinterprets the "letdown" as indicating that he is losing ground, even though real articular improvement is maintained or increased. Also, the patient stimulated by large doses of cortisone may become excessively active, failing to rest sufficiently and overusing involved joints. Consequently, the rheumatoid process (or mechanical abnormalities incident to it) may be aggravated, and its subsequent control may be made more difficult.

After suppression of the rheumatoid process is obviously under way and even before it is complete, the dose should be reduced gradually to a minimal maintenance level, usually in decrements of 5 to 12.5 mg. at intervals varying from a few days to weeks, depending on the patient's response and the size of the dose. If the initial response is slow, the dose is reduced slowly. If the patient has received 75 mg. or 100 mg. doses initially and has responded rapidly, the dose may be reduced more quickly, in 12.5 mg. decrements at intervals of two to seven days. As the dose of cortisone and the rapidity of improvement diminish, the rate of reduction of the dose is decreased. When the daily dose is at or less than 62.5 mg., individual reductions usually should not exceed 12.5 mg., and often even smaller reductions, such as 5 mg., are more satisfactory.

Gradual reduction of the dose is an important factor in achieving a satisfactory maintenance level. Many patients who did not respond well when the dose was reduced abruptly from 100 mg. to 50 mg. per day have been successfully maintained subsequently on 50 mg. daily doses or less when the reduction from 100 mg. doses was performed more gradually. Even when small doses intended to approximate a minimal maintenance dose, for example, 37.5 or 50 mg. per day, are employed initially, reduction should be tried repeatedly when reasonable control of symptoms is achieved. Shortly after each reduction some rheumatic symptoms may develop transiently. These symptoms usually are mild and disappear in a few days if reduction is sufficiently gradual. Of course, if reduction is continued too far, rheumatic symptoms recur severely and persistently. Then the dose should be increased to the previous level that afforded satisfactory maintenance.

Maintenance Dose.—The maintenance dose at any given time should be the smallest dose that will afford reasonable, although not necessarily complete, control of symptoms, and it should be sufficiently small to avoid significant hypercortisonism. For almost every patient, the proper "maintenance dose" varies from time to time, and appropriate adjustments should be made whenever and as often as is indicated by the status of the patient. If a flare-up necessitates a temporary increase in dosage, small increments, such as 5 to 12.5 mg. or occasionally up to 25 mg., for a few days usually suffice, although sometimes a larger or more prolonged increase is required. Reduction of the dose should be accomplished as soon as the flare-up is obviously coming under control and usually can be started before it is completely controlled. Maintenance doses also vary considerably from patient to patient, and each case requires individual management. Children and women, especially postmenopausal women, generally are more susceptible than men to the effects of cortisone. Our experience to date suggests (until we know more about the metabolism of cortisone) that for long-term administration, daily maintenance doses generally should not exceed 25 mg. for children, 37.5 mg. for menopausal or postmenopausal women, 50 mg. for other women, and 75 mg. for men, except temporarily in case of an articular flare-up or increased stress. Exceptions to these arbitrary limits occur. Some patients cannot tolerate such doses for prolonged periods; others tolerate larger doses.

SUPPLEMENTARY PROCEDURES DURING CORTISONE ADMINISTRATION

Certain precautionary and supplementary measures, which require the cooperation of the patient with his physician, are essential for best results from treatment. Most rheumatoid patients can be treated with cortisone on an ambulatory basis and need not be hospitalized, unless special care in the administration of cortisone is necessary because of complicating factors. A diet containing ample amounts of protein is recommended. Ordinary amounts of sodium may be permitted in most cases. More rigid restriction (such as a diet containing 2 gm. or less of sodium)[5] is indicated if the patient is prone to retention of fluid. Potassium salts are not prescribed by us unless a specific indication for their use occurs or is anticipated, if for example, cortisone-induced edema or hypopotassemia has previously occurred, if large doses of cortisone are required (for example, 100 mg. daily doses for several weeks or larger doses for shorter periods), or if the dietary intake is inadequate, as might be the case postoperatively in a patient unable to take adequate nourishment by mouth.

For the first two or three weeks of treatment with cortisone the patient should be observed at least once every two or three days, then at gradually lengthening intervals if all goes well. Patients for whom maintenance doses have been established for several weeks and who do not experience side-effects may not need to be seen by the physician oftener than every two to four weeks. Patients who are especially susceptible to the occurrence of side-effects or who, for one reason or another, temporarily are receiving relatively large doses (100 mg. or more per day) should be observed oftener. The development of complicating factors, such as flare-ups of arthritic symptoms, intercurrent illnesses, or appearance of side-effects of cortisone therapy, may call for additional visits.

At each visit the antirheumatic effect should be carefully determined and evaluated, the weight and blood pressure should be noted, and evidences of hypercortisonism should be sought. The first signs of hypercortisonism most often are psychic effects (mild or moderate insomnia, nervousness, restlessness or "inner tension," or changes of mood), excessive appetite, retention of fluid, changes in distribution of fat (facial rounding and supraclavicular fat pads), and hypertrichosis. The possibility that cortisone given in large doses may partially conceal signs and symptoms of intercurrent diseases should be remembered. Fortunately, the relatively small doses of cortisone suitable for prolonged maintenance

5. Committee on Dietetics of the Mayo Clinic: Mayo Clinic Diet Manual, Philadelphia, W. B. Saunders Company, 1949, pp. 113-127.

usually has not resulted in significant masking of such symptoms in our experience. Data regarding doses of cortisone, antirheumatic effects, manifestations of hypercortisonism, and other pertinent details should be recorded in a form suitable for future reference and comparison.

Laboratory Examinations.—Simple laboratory procedures usually suffice. Urinalysis should be performed weekly for two or three weeks and, if the results are normal, monthly thereafter. Determination of the sedimentation rate, hemoglobin level, and leukocyte count may be done at intervals of one to three months or oftener if deemed necessary. Additional procedures, such as determination of the fasting blood sugar, blood urea nitrogen, and serum electrolyte levels, should be performed only as indicated by the circumstances of the case. More frequent and more extensive laboratory examination, including determination of the blood electrolyte level, usually are required if doses of 100 mg. or more per day are used. Results of laboratory tests cannot, however, be substituted for careful clinical appraisal of the patient as the principal basis for regulation of the dose of cortisone.

Avoidance of Side-Effects.—It is desirable to avoid hypercortisonism. The employment of the lowest effective dose of cortisone is the most important measure in this regard. Certain countermeasures also are helpful in preventing or controlling some side-effects that may develop during the period of establishing a maintenance dose. If fluid is retained, one or more of the following measures may be of benefit: the use of a diet without extra sodium (2 gm. of sodium per day) or, if more rigid restriction of sodium is necessary, a sodium-poor diet (0.5 gm. of sodium per day)[5]; the use of diuretics, such as potassium chloride or nitrate, 1 to 2 gm. three times daily, or, rarely, mercurial diuretics as employed for other types of edema. The administration of potassium chloride, 1 to 2 gm. three times daily, is helpful in cases of hypopotassemia; however, if potassium is administered in the presence of renal insufficiency, levels of serum potassium should be determined periodically to avoid hyperpotassemia and its serious consequences. Mild sedatives, such as barbiturates, may benefit patients who have insomnia and other manifestations of mild mental stimulation. Estrogens (for example, estrone in a dose of 5 mg. given intramuscularly twice a week or Premarin in a dose of 1.25 to 2.5 mg. per day given orally) diminish some menopausal symptoms aggravated by cortisone and in some cases may diminish certain other signs of hypercortisonism.[4]

In some cases, even when the smallest effective dose of cortisone is used and only partial control of active rheumatoid manifestations is obtained, side-effects may result. The physician is then faced with the problem of whether to discontinue the use of cortisone because of side-effects or to accept the increased risk of some hypercortisonism to maintain partial control of the active rheumatoid process. In some patients, active rheumatoid arthritis potentially may be a greater threat than one or two mild, nonprogressive side-effects not harmful in themselves, such as slight facial rounding, small supraclavicular fat pads, mild hypertrichosis, or slight menstrual irregularity. The dose of cortisone should be reduced gradually, however, even to the point of discontinuation in the event of progressive hypercortisonism, as evidenced by an increase in the number and severity of side-effects.

The use of cortisone should be discontinued, usually by gradual reduction of the dose, also in case of the development, despite preventive efforts, of any of the following complications: activation of a latent tuberculous process; psychotic episodes; intractable symptoms of peptic ulcer; long-continued negative nitrogen balance resulting in muscular wasting and weakness or osteoporosis; significant hypopotassemia as evidenced by weakness and characteristic electrocardiographic changes; increasing hypertension or cardiovascular-renal insufficiency; increased incidence of thrombophlebitis or thromboembolic phenomena; poorly controlled diabetes mellitus; prolonged delay in healing of a wound; or pronounced increase in frequency of attacks of a convulsive disorder.

Development of peptic ulcers or aggravation of previously existing manifestations of ulcer has occurred in a few patients while receiving cortisone or corticotropin.[6] This may have been due in part to increased gastric secretion of hydrochloric acid and pepsin caused by cortisone[6] and possibly also to the mental stimulation and increased tension that excessive doses of cortisone commonly produce. In our experience, patients in whom aggravation of the manifestations of peptic ulcer occurred usually showed other evidence of hypercortisonism; some of these same patients subsequently have been maintained on smaller doses of cortisone, which yielded a satisfactory antirheumatic response but which did not produce hypercortisonism or manifestations of peptic ulcer. If the rheumatoid patient with peptic ulcer is to receive cortisone he should follow carefully a proper medical regimen for treatment of peptic ulcer, and the dose of cortisone should be kept as low as possible. These precautions are essential, even though the ulcer has been inactive for years. If, despite these precautions, the manifestations of ulcer are aggravated by cortisone, the use of cortisone should be discontinued. In case of an emergency, such as bleeding, perforation, or other need for surgery, the dose of cortisone must be continued and even temporarily increased through the period of increased stress.

Regulation of Dose of Cortisone in Case of Increased Stress.—Normally in case of increased stress the body requires and the adrenal cortices, under the stimulation of the pituitary, produce increased amounts of adrenocortical steroids. This normal pituitary-adrenocortical mechanism is inhibited during and for variable periods, from days to many months, following the administration of cortisone; during this period the supply of adrenocortical hormones in the cortisone-treated patient is limited largely to that that is furnished exogenously. Therefore, it is essential that the dosage of adrenocortical hormones (usually in the form of cortisone) be regulated to meet the increased needs of stress, thereby avoiding adrenocortical insufficiency and its serious and some-

6. Gray, S. J.; Benson, J. A., Jr.; Reifenstein, R. W., and Spiro, H. M.: Chronic Stress and Peptic Ulcer: 1. Effect of Corticotropin (ACTH) and Cortisone on Gastric Secretion, J. A. M. A. 147: 1529-1537 (Dec. 15) 1951.

times fatal consequences. At present, the duration of complete or partial pituitary-adrenocortical suppression following administration of various doses of cortisone and periods of treatment with it cannot be predicted with any accuracy, nor are there adequate means of estimating beforehand the ability of the patient's pituitary-adrenocortical mechanism to respond to stress or the patient's requirement for adrenocortical hormones under stress. Consequently, at present, certain rather arbitrary precautions seem advisable in the management of these patients.

For minor stress, for example, slight upper respiratory tract infection, a mild case of influenza, or slight trauma, continuation or resumption of or slight increase in the previous maintenance dose of cortisone may be all that is required. Careful clinical observation of such patients will reveal the need for increases in the dose of cortisone. In case of severer stress, for example, a major surgical procedure, trauma, burn, hemorrhage, other forms of shock, severe infection, dehydration, or unusual loss of body secretions, use of large supplemental doses of cortisone may be necessary temporarily. Unfortunately, the exact requirement of cortisone cannot be precisely determined in advance; the patient must be kept under close observation, and the dose must be adjusted to meet the varying circumstances of the case. In general, doses of about 200 mg. of cortisone per day have been used with success in cortisone-treated patients who encounter major stress; however, even larger doses (300 to 600 mg. or more daily) may be used for a day or more if needed to prevent adrenocortical insufficiency. In the event of major surgical treatment, for example, for patients who have received cortisone within the preceding six months or even within the preceding two years if hypercortisonism has occurred, it is our present custom to administer intramuscularly 200 mg. of cortisone daily for two days before the operation and again preoperatively on the day of the operation. During and following the operation the patient is observed closely, and the blood pressure is determined hourly for 36 hours. If signs of adrenal insufficiency (anorexia, nausea, vomiting, hiccups, fever, weakness, tachycardia, hypotension, respiratory failure, and vascular collapse) develop, 100 mg. of a special solution of hydrocortisone* for intravenous use (100 mg. of hydrocortisone-free alcohol dissolved in 500 cc. of a 5% glucose solution, as currently available, or preferably in isotonic sodium chloride solution) is promptly administered intravenously together with a liter of isotonic sodium chloride solution; administration of the solution of hydrocortisone and the sodium chloride solution intravenously is repeated as needed. In addition, for patients in critical condition or in cases in which hydrocortisone for intravenous use is not immediately available, aqueous adrenocortical extract may be used; for example, an intramuscular injection of 40 cc. of extract may be given in each of two sites, and 40 cc. of the same extract in a liter of isotonic sodium chloride solution may be administered intravenously over a four hour period, this latter being repeated every four hours for as long as is necessary. Also, oxygen, blood transfusions, and vasopressor drugs (e. g., 1 to 2 cc. of a 0.1% solution of *l*-arterenol given intravenously in a liter of sodium chloride solution) are used as indicated for patients in shock.

On days following the operation the dose of cortisone is reduced gradually, as the patient's condition permits; a dose of 100 mg. usually suffices for the day following operation in uncomplicated cases, and in most instances the dose is reduced within four to seven days to the level that prevailed prior to preparation for the operation. If the patient is not eating well postoperatively, the levels of serum electrolytes, especially potassium, should be watched carefully, and abnormalities, such as hypopotassemia, should be corrected by appropriate parenteral therapy. Oral administration of cortisone may be resumed whenever the patient is able to utilize medicaments given by mouth. Appropriate modifications of this scheme may be used in other circumstances, such as those listed previously, in which the need for adrenocortical hormones is temporarily increased.

Minor surgical procedures performed with the patient under local anesthesia usually are tolerated satisfactorily by the patient if administration of cortisone is continued in the usual dose or in a slightly increased dose. In some cases, because of the long interval since cortisone was last administered or because of the small amount of cortisone previously used, the administration of cortisone at the time of major or minor operations may not be considered necessary. All physicians, including surgeons and anesthesiologists, concerned in the care of such patients should know that the patient has been receiving cortisone and should watch carefully for signs of adrenocortical insufficiency during and following the operation.

Considerations generally similar to those discussed also apply to the patient who receives or has received corticotropin. Although this hormone stimulates adrenocortical function, it inhibits the corticotropic activity of the pituitary and thus interferes with the normal pituitary-adrenocortical relationship. Appropriate increases in the dose of corticotropin can be used in case of increased stress in patients who have been receiving corticotropin, if the adrenal cortices are capable of responding. One milligram of corticotropin administered intramuscularly generally is considered to stimulate reactive adrenals to produce the equivalent of about 2.5 mg. of cortisone, but there is such variation from patient to patient that usually prediction of the effect in any individual case is not possible. Therefore, dosage of corticotropin must be determined on the basis of the reaction of the individual patient. Administration of corticotropin does not constitute adequate emergency treatment of adrenocortical insufficiency when adrenal cortices are atrophic (as in cortisone-treated patients or patients in whom corticotropic activity recently has been lacking), since the atrophic adrenal cortices may require several days of stimulation before adequate production of adrenocortical hormones is achieved.

Patients should be told of the inhibition of pituitary-adrenocortical function by cortisone and corticotropin and should be instructed to inform physicians who subsequently treat them that they have been taking these hormones; in fact, we recommend that patients who re-

* Hydrocortisone or cortisone for intravenous use should be in solution, not in suspension as used for intramuscular or intra-articular injection.

ceive cortisone or corticotropin be given cards (similar to those carried by diabetic patients) designed to inform the emergency physician of this fact in case of accident.

Supplementary Treatment Measures.—The use of supplementary measures of treatment for the arthritis, such as physical and occupational therapy, salicylates, additional rest, proper diet, protection of involved joints from overuse or trauma, and appropriate orthopedic measures, should be continued during administration of cortisone, since cortisone alone may not control all rheumatoid symptoms and since it does not aid in the repair of structural damage. The control of the articular reaction by means of cortisone may be made more difficult if the patient and physician rely on hormonal action alone and neglect supplementary treatment. Aggravation of symptoms during treatment often can be traced to abuse of joints or to overexertion.

OCCURRENCE OF RHEUMATIC SYMPTOMS DURING TREATMENT

Most rheumatoid patients who receive cortisone by the present methods are not completely free of symptoms. At present, it is usually necessary to compromise the maintenance dose so that all rheumatoid manifestations are not completely suppressed. In addition, some symptoms are due to irreversible changes on which cortisone has no effect. Also, temporary recurrence of symptoms may be expected with reduction of the dose, as discussed previously. An increase in symptoms sometimes occurs for a day or two if the intramuscular method of administration is substituted for the oral method, owing to the difference in speed and duration of action of cortisone given by the two routes. This can be avoided by continuing the oral administration of cortisone for 12 to 24 hours after the first intramuscular injection. Such overlapping is not necessary when the change is made from the intramuscular to the oral route.

Certain factors that in the past have seemed to cause temporary aggravation of rheumatoid symptoms may do so to a certain extent also during cortisone therapy, despite the protection of cortisone. These factors may include intercurrent infections, menstruation, overuse of or other trauma to involved joints, overexertion, undue mental stress, and changes in weather. Often such exacerbations subside spontaneously within a few days, especially if the precipitating factor is eliminated; a temporary increase in dose is seldom required in such cases.

Spontaneous flare-ups develop in some patients while receiving doses of cortisone that previously have been adequate for maintenance. The reason for this failure of a previously adequate dose has not been explained satisfactorily in all cases. It may be due to an increase in the severity of the rheumatoid process in many cases; adaptation of tissues to excesses of cortisone or suppression of some normal endocrine mechanism also has been postulated by others but remains unproved.

DISCONTINUATION OF CORTISONE THERAPY

The length of time during which cortisone can be administered safely has not yet been established. Some patients now have been maintained on cortisone for more than two years, with satisfactory results. The more nearly the maintenance dose approximates the minimal requirement, generally the longer treatment can be continued. To date, there is no evidence that prolonged administration of cortisone produces an irreversible effect on the adrenal cortex, although adrenal cortical function may be suppressed temporarily, as is usually the case in an endocrine gland following the prolonged use of its product from an exogenous source. Repeated efforts to reduce the maintenance dose will reveal which patients have reached a stage in their disease in which they require smaller doses or even no cortisone. Thus, discontinuation of cortisone might be tried in the patient whose maintenance dose has been reduced successfully for several weeks to 25 mg. or less per day. When the administration of cortisone is to be stopped, the dose usually should be reduced gradually rather than abruptly to avoid or lessen the severity of the cortisone-withdrawal syndrome and to diminish the flare-up of rheumatoid symptoms if it occurs. As stated previously, the use of cortisone should not be discontinued during a period of unusual stress.

COMMON MISTAKES IN THE USE OF CORTISONE

From our own experience and from the experience of others, it appears that the following mistakes have been made frequently in the use of cortisone for rheumatoid arthritis: (1) improper selection of patients, i. e., selection of those who have complicating conditions that contraindicate the use of cortisone, those with severely damaged joints but little or no active arthritis, uncooperative patients, or patients financially unable to purchase cortisone for an indefinite period; (2) improper regulation of dose, including the use of too large or, less commonly, too small doses, too rapid reduction of dose, the use of a single daily oral dose instead of divided doses, and failure to individualize the dose to meet each patient's varying need and tolerance for cortisone; (3) inadequate supervision of patients, including insufficient clinical observation and failure to recognize early signs of hypercortisonism; (4) neglect of supplementary measures of treatment; (5) discontinuation of administration of cortisone at the time of surgery or other increased stress. Avoidance of these errors increases considerably the usefulness as well as the safety of cortisone therapy.

RESULTS OF PROLONGED TREATMENT

In a previous paper we reported the clinical effects of administration of cortisone to 100 rheumatoid patients for periods of 1 to 14 months, the average being 5 months.[3] Not all of these 100 patients have been available for more prolonged study. The results of treatment of 65 who have remained under our observation and to whom cortisone has been administered, generally in accord with the principles discussed, are reported here. Forty-six (71%) of these patients are still receiving cortisone after 8 to 24 months of continuous administration. Nine patients (14%) have obtained satisfactory results from programs of interrupted administration of cortisone; three of these required only a single course of cortisone, while six have had repeated courses. Administration of cortisone was stopped in two instances (3%) at the patient's request, even though active rheumatoid symptoms were well relieved; in these cases, irreversible changes so far overshadowed active symptoms that the patients did not regard relief of the latter

with cortisone as worth the trouble and expense of continued administration. Administration of cortisone was discontinued in 8 (12%) of the 65 patients because doses required for significant relief of symptoms produced significant side-effects. Thus, the use of cortisone may be said to have been successful in some degree, and often greatly so, in controlling active symptoms in 57 (88%) of these 65 patients and to have been a "failure" because of side-effects in 8 patients (12%). No previous form of treatment, including the use of gold, has given so much relief in such a large percentage of our patients.

The 46 patients who are still receiving cortisone by continuous administration at the time of writing (May, 1952) have been treated with this hormone for periods ranging from 8 to 24 months, the average being 15 months. In these 46 patients, relief of symptoms has been great in 9 patients (20%), marked in 16 (35%), moderate in 19 (41%), and mild in 2 (4%).[7] Daily maintenance doses in these 46 patients are as follows: 75 mg. in 5 (11%), 62.5 mg. in 5 (11%), 50 mg. in 21 (46%), 37.5 mg. in 11 (24%), and 25 mg. in 4 (8%). Side-effects were present at the time this paper was written in only 9 (20%) of the 46 patients receiving continuous maintenance doses. Most of these 9 patients showed only one or two side-effects, which were mild in all instances: supraclavicular fat pads (6), facial rounding (5), hypertrichosis (2), weakness (1), striae (1), nervousness (1), and edema (1); however, even these side-effects, many of which developed when the patients were receiving larger doses than we would use now, are undesirable; we are attempting to eliminate them by appropriate reduction of the dose.

SUMMARY

Three principal programs of treatment are currently available for patients with rheumatoid arthritis: (1) the conservative program of general measures consisting of physical therapy, use of salicylates, extra rest, and other supportive measures; (2) the use of cortisone in addition to the conservative program; (3) the use of chrysotherapy in addition to conservative measures. Cortisone is indicated and suitable for many but not all rheumatoid patients. Some patients respond adequately to the conservative program and do not require cortisone. Others show definite contraindications to the use of cortisone. Still others require for a satisfactory antirheumatic effect larger doses than they can tolerate safely (by present methods of administration), either because of the severity of the disease or because of a low tolerance for cortisone. Generally, the conservative program should be tried first, but if its conscientious application for a reasonable period fails to afford sufficient control of active rheumatoid manifestations, then the use of cortisone is justified, whenever the benefits can be expected to exceed the risks and expense of its administration in the particular patient. Currently, we reserve the use of chrysotherapy for patients who require more than the general program of conservative measures and who are not suitable for treatment with cortisone.

Cortisone may be given orally or intramuscularly by programs of prolonged or interrupted administration. For most patients, oral administration is more practical than intramuscular administration, and prolonged administration provides a more effective and more sustained antirheumatic response than interrupted administration. The daily dose of cortisone given orally must be appropriately divided (usually in three or four parts) and spaced (about every six to eight hours) throughout the 24 hour period. Doses must be individualized and constantly regulated to meet the changing need and tolerance of the patient. The dose should be regulated to avoid hypercortisonism, even though subsequent relief may be submaximal rather than maximal. If hypercortisonism does develop with these relatively small doses, it usually appears gradually, can be recognized early, rarely presents an emergency, and is reversible on reduction of the dose. Other precautionary and adjunctive measures are essential during treatment with cortisone: regular clinical supervision of the patient, continuation of supplementary measures of treatment, and, under special circumstances, the continuation or augmentation of the dose of cortisone during periods of stress. Details of these measures are discussed.

Sixty-five patients treated with cortisone have been observed for prolonged periods. Forty-six of these have received cortisone continuously for 8 to 24 months. In 44 of these 46 patients moderate to great relief from active rheumatoid manifestations, with a low incidence of hypercortisonism, has been maintained; in the other 2 patients, improvement was only mild. Cortisone was discontinued or administered intermittently in the other 19 patients.

CONCLUSIONS

Cortisone in relatively small doses can be used effectively and safely for prolonged periods in properly selected and carefully managed patients with rheumatoid arthritis. In many such instances, its use along with the conservative program of simple general measures represents the treatment of choice.

7. Relief of symptoms was graded as follows: 90% or more relief—great; 75 to 89% relief—marked; 50 to 74% relief—moderate; 25 to 49% relief—mild.

Scarlet Fever.—Scarlet fever is one of the bacterially caused contagious diseases that seems to have decreased considerably in both numbers and severity. Proof of this is the fact that in the past three years not only has the number of reported cases [in Philadelphia] been reduced by more than three-fourths from the number in the early 1930's but the mortality rate has been reduced to zero. Certainly all chemotherapeutic agents and antibiotics effective against the gram-positive cocci have been very helpful in overcoming both this disease and its complications, with penicillin and the sulfonamides leading the list. Contagious disease hospitals that were previously filled during the winter and spring months with scarlet fever patients find only a small remnant of these cases requiring hospitalization, and there has been a resultant generalized movement to reduce the quarantine of this disease from the old minimum of 21 days to 7 to 10 days, and even to eliminate it entirely, for the economic hardship of the quarantine seems to far outweigh the general seriousness of the disease, under adequate treatment. In those patients sensitive to penicillin, or where strains of streptococci resistant to penicillin are obtained, aureomycin or terramycin in the usual doses has been found to be equally effective. This effectiveness of antibiotic therapy has to a large degree obviated the necessity for active immunization, a procedure formerly noted to be frequently associated with reactions which were occasionally more severe than a mild attack of the disease itself.—C. C. Fischer, M.D., Newer Treatments in Contagious Diseases, *The Pennsylvania Medical Journal*, January, 1953.

CLINICAL NOTES

OBSTETRIC FRACTURE-DISLOCATION OF THE PELVIS

REPORT OF A CASE WITH INJURY TO LUMBOSACRAL TRUNK AND FIRST SACRAL NERVE ROOT

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This communication concerns a fracture of the sacrum with disruption of the left sacroiliac synchondrosis and symphysis pubis, presumably produced by the force of the contractions of the uterus during labor. Although symptomatic loosening of the symphysis pubis occasionally occurs in the late months of pregnancy and rupture of the symphysis pubis during delivery is known to occur, dislocation of the sacroiliac joint is rare,[1] fracture of the sacrum is extremely rare, and an associated injury to the first sacral nerve root seems not to have been reported. The patient had previously complained of low back pain for 10 years and had had right dorsal, left lumbar scoliosis since adolescence.

REPORT OF A CASE

The patient was a 37-year-old woman, gravida 3, para 2, whose pregnancy had resulted in spontaneous delivery of a 10 lb. 10 oz. (4,819 gm.) female infant six days after the expected date of confinement, following a two hour labor. No anesthesia was used except local infiltration of the perineum with procaine for episiotomy. The events described by the patient and the physician in the labor room were dramatic. The patient was fully awake at about one and one-half hours after the onset of labor, when she experienced a sudden sharp pain, heard a loud "cracking" sound and felt "as though something burst" in the left sacroiliac region. She stated that the pain in this region "hit" once and then left. Similar pain occurred later when she attempted to sit up or get out of bed 24 hours after the delivery. This pain became localized in the left sacroiliac region, radiating into the left leg and foot. She also noted a "lump" on the left side of the low back, numbness, tingling, coldness, and lack of sensation in the left leg, and weakness and "turning" of the left ankle. These symptoms and a waddling gait continued until six weeks after the delivery, when roentgenographic examination of the low back and pelvis showed a displaced fracture-dislocation of the left sacroiliac joint and complete separation of the symphysis pubis.

History.—Until 1940, the patient had no serious illness, except "curvature of the spine," which had developed at the age of 11. Her first pregnancy, in 1938, resulted in normal delivery of a 9 lb. 8 oz. (4,309 gm.) baby. The second pregnancy occured in 1942, when she was discovered to have syphilis. This pregnancy was terminated by a therapeutic abortion for pernicious vomiting. The syphilis was promptly treated, and the patient has had a negative reaction to the Wassermann test since 1943. It is important to note that the patient had experienced repeated attacks of pain in the low back radiating into the left leg for five years before the current injury. In the year before her pregnancy, the pain in the leg had become cramping in quality and severer in intensity. During the middle and last trimesters of her pregnancy, she had had a waddling gait and had complained to her physician of the same low back pain. These symptoms had been alleviated by use of a lumbosacral corset. The family history was noncontributory.

Orthopedic Examination.—An orthopedic examination was done six weeks post partum. The patient was a thin, pale white woman, 5 ft. 3 in. (160 cm.) tall and weighing 110 lb. (49.9 kg.). When standing erect, she had a pronounced right dorsal, left lumbar rotoscoliosis. The pelvis was tilted 20 degrees upward on the left and rotated 30 degrees clockwise on the right. There was a bony hard mass measuring about 10 cm. in diameter in the region of the posterior superior spine of the left ilium. There was slight limitation of chest expansion. The range of motion of the dorsal and lumbar spine was slightly restricted, but only as much as would be expected with scoliosis.

The limits of the straight leg raising test were 90 degrees on the right and 80 degrees on the left, with pain localized in the left side of the low back. The neurological findings were most remarkable. The motor power in the extensor muscles of the left great toe was weak and inactive against only slight resistance. The left ankle jerk was absent, while all the abdominal and deep tendon reflexes of both lower extremities were equal and briskly active. There was pronounced loss of pain perception to pin prick in the first web space of the left foot. There was also hypesthesia on the lateral aspect of the left lower leg and foot.

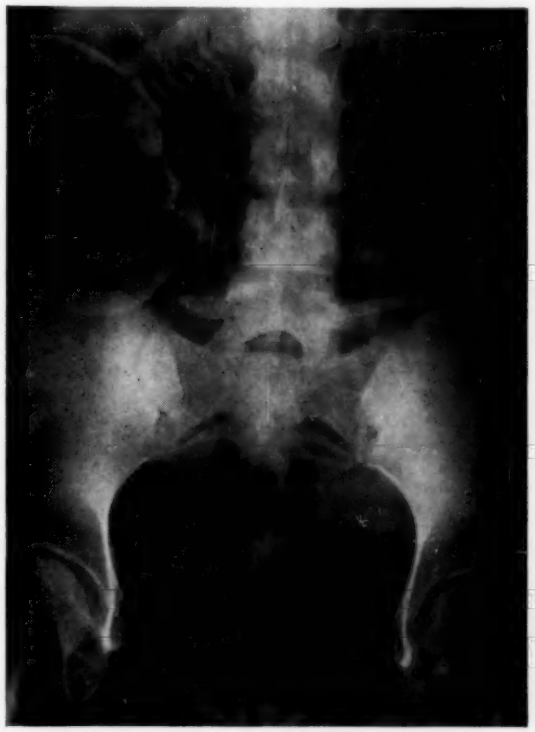

Fig. 1.—Fetus and maternal pelvis at seven months of pregnancy.

Laboratory and X-Ray Examination.—The results of laboratory tests were as follows: spinal fluid cell count, no white blood cells and 100 red blood cells per cubic millimeter, with 90% of the red cells crenated; hemoglobin level (Sheard and Sanford), 10.3 gm. per 100 cc.; red blood cell count, 3,780,000 per cubic millimeter; white blood cell count, 7,200 per cubic millimeter; erythrocyte sedimentation rate (modified Cutler), 10 mm. per hour; serum alkaline phosphatase level (King and Armstrong), 12 phenol units; spinal fluid total protein level, 52 mg. per 100 cc., with a positive reaction to the Pandy test; serum total protein level, 6.2 mg. per 100 cc.; serum calcium level, 10.2 mg. per 100 cc.; and urine, normal. Results of tests for syphilis were as follows: Kahn test, negative reaction; Mazzini test, negative reaction; Kolmer test, negative reaction; gold curve, negative result.

Roentgenograms made before and after the delivery, showing the pelvis and spinal canal before and after the injuries occurred, are shown in the figures. Subarachnoid hemorrhage and possible traction on the left nerve root shadow adjacent to fracture of the sacrum at the first sacral foramen were suggested by figure 4.

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1. DeLee, J. B., and Greenhill, J. P.: Principles and Practice of Obstetrics, ed. 9, Philadelphia, W. B. Saunders Company, 1947.

Diagnosis and Treatment.—The diagnosis established was fracture-dislocation of the left sacroiliac joint, with separation of the symphysis pubis and contusion of the first sacral nerve root or the lumbosacral plexus. The patient was readmitted to the hospital, 47 days post partum, for observation, spinal fluid studies, a myelographic examination, complete bed rest, manipulation

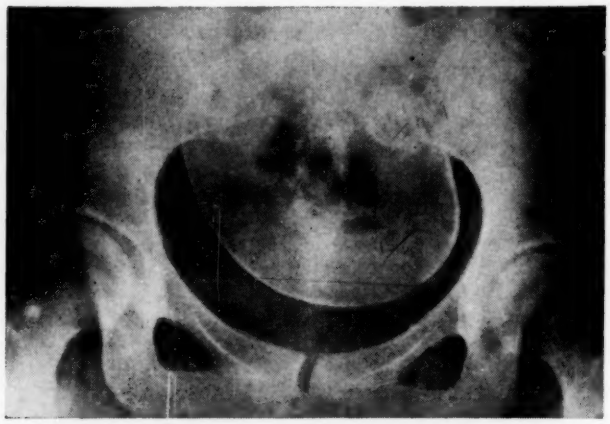

Fig. 2.—Results of x-ray pelvimetric examination in the eighth month of pregnancy, showing a presumably adequate gynecoid pelvis.

of the fracture, traction, and possibly laminectomy. With the patient under thiopental (pentothal®) sodium anesthesia, the pelvis was manipulated by torsion, rocking with the thighs flexed on the abdomen, and compression of the iliac crests in lateral recumbency. Postoperative x-ray examination showed no change in the position of the fractures or dislocations. The pain in the left sacroiliac region was, however, alleviated after only a few days of bed rest in Russell traction. The necessity for a laminectomy then seemed less urgent, and further conservative treatment was advised. Ten pounds (4.5 kg.) of traction was applied on each leg for three weeks, and this was followed for another three weeks by bed rest and exercises in recumbency. During this six week period, the low back pain had almost disappeared, and the motor power of the great toe extensor muscles recovered from grade "trace" to "good." The left ankle jerk also returned to normal, and sensory perception

Fig. 3.—The low back and pelvis two months post partum, showing a fracture-dislocation of the sacroiliac joint and rupture of the symphysis pubis (arrow indicates location of the fracture).

improved in the foot and leg. Six months after delivery, there was no pain, and the patient could walk without limping. Roentgenographic examination one year after the date of the injury showed the same amount of displacement of the symphysis pubis, and the sacroiliac joint was solidly ankylosed.

2. Hisaw, F. L.: Corpus Luteum Hormone: Experimental Relaxation of Pelvic Ligaments of Guinea-Pig, Physiol. Zoöl. **2**: 59-79, 1929.

COMMENT

The foregoing case illustrates several physiological and clinical points about the function of the pelvic joints of women. It is well known that the pelvic ligaments and the specialized fibrocartilage of the pelvic synchondroses undergo progressive structural modifications during gestation. The fibrocartilage is absorbed, and the ligaments become loosened, apparently to facilitate expulsion of the fetus through the pelvic canal. Hisaw [2] prepared a relatively pure pelvic-relaxing extract of sow's corpus luteum, for which he suggested the term "relaxin." This hormone is distinct from progesterone or estrogen. Estrogen alone has been observed to produce the same changes in guinea pigs and mice, but this effect has been attributed to secondary stimulation of the corpus luteum. Furthermore, a single dose of Hisaw's preparation was powerful enough to greatly augment the effect produced by estrogen. A relaxin-like substance has been shown to exist in the blood of pregnant women and has been assumed to prepare the birth

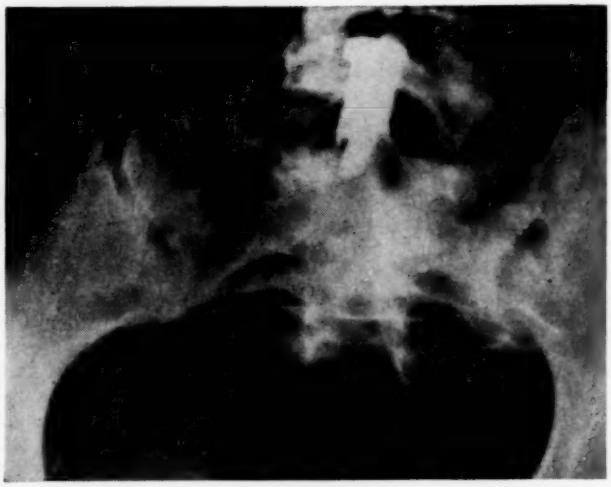

Fig. 4.—Roentgenogram of the spine showing 3 cc. of ethyl iodophenylundecylate (pantopaque®) in the caudal sac with the patient standing upright against the x-ray table. Note the asymmetrical outlines of the sleeves of the first sacral nerve roots.

canal for parturition. The pelvic modifications in the pregnant woman are not, however, nearly as pronounced as those described in guinea pigs and mice. There is mainly thickening, softening, and increased vascularization of the tissues in and about the pelvic joints, but very little actual absorption of the articular structure. Observations on thousands of obstetric patients have led to the view that there is slight, if any, actual increase in the diameter of the pelvic inlet at term. Such changes as occur in the pelvic joints do not show appreciably in x-ray pelvimetry, and are not regarded as factors influencing the management of a mother with an insufficient pelvic inlet.

In the case described, the patient had had symptoms of low back pain and sciatica, presumably secondary to the long standing rotoscoliosis, prior to the onset of pregnancy. The range of motion of the lumbosacral joints also was somewhat restricted. The end organ, or fibrocartilaginous tissue, of the sacroiliac joints, which ordinarily reacts to "relaxin," may have been less responsive than it is in younger women. The stiffness of

the joints may account for the occurrence of the fracture in a pelvis that was considered adequate in size to permit spontaneous delivery.

The problem of finding a method of measuring the order of magnitude of the force of the uterine contractions during labor has been a major challenge in obstetrics and has never been satisfactorily solved. A number of techniques have been described to estimate the "normal" expulsive force of the uterus of women in labor. A hydraulic press mechanism has been postulated to explain the enormous intrauterine pressures that have been registered. The hydraulic mechanism requires, however, a rigid mechanical system and may not apply accurately to the elastic structure of the uterine muscle, although this theory at least would permit the analogy of an obstetric injury with similar types of injury incurred by the mechanical violence of an automobile collision. Fractures of the sacroiliac joints, with associated damage to the cauda, occur in modern times chiefly in automobile and motorcycle accidents. Bonnin [3] described five cases and reviewed the literature. The fractures, exactly as in this obstetric case, usually occurred in the weakest part of the sacrum, in the notch between the articular process of the fifth lumbar vertebra and the lateral mass of the sacrum and, also, in the region across the first and second sacral foramens.

The neurological lesion in this case deserves detailed discussion. Dr. J. Albert Key [4] noted that the neurological observations suggested that both the fifth lumbar and the first sacral segments were involved in the injury. The displaced fracture through the first sacral intervertebral canal would indicate damage to the first sacral nerve root in this location, but other types of injury to the lumbosacral plexus are also likely. The lumbosacral trunk, which includes the fifth lumbar nerve root and a component from the fourth lumbar nerve root, passes downward over the bony brim of the true pelvis, and at this point it is especially vulnerable to pressure. Dr. W. Eugene Stern [5] called my attention to a report by King [6] of 20 cases of injury to the lumbosacral plexus caused by prolonged or difficult labor and a large baby. None of these patients made a complete recovery, as did the patient described here. King did not mention associated fractures of the pelvis in any instance. Perhaps the damage to the lumbosacral plexus may be more serious when it occurs without a fracture than when the pelvic joints are able to give way.

The unique combination of circumstances in the foregoing case suggests that the mobility of the pelvic joints may be an important element in parturition in the human female. The patient had a preexisting disorder of the spine, an apparently adequate pelvic inlet, as determined by x-ray pelvimetry; a very large baby; and forceful labor contractions. The occurrence of the fracture in the sacroiliac joint suggests that the pelvic synchondrosis may function as a "shock absorber," which protects the skeleton of the mother against the force of the uterine contractions.

SUMMARY

A case of fracture-dislocation of the pelvic joints, presumably produced by the force of the uterine contractions during labor, and an associated injury of the lumbosacral trunk and the first sacral nerve root is described. This case illustrates the probable role of the pelvic joints as shock absorbers rather than simple seams of expansion during labor. The experience with this patient indicates the value of conservative treatment for this injury.

1019 Gayley Ave. (24).

3. Bonnin, J. G.: Sacral Fractures and Injuries to the Cauda Equina, J. Bone & Joint Surg. **27**: 113-127, 1945.
4. Key, J. A.: Personal communication to the author.
5. Stern, W. E.: Personal communication to the author.
6. King, A. B.: Neurologic Conditions Occurring as Complications of Pregnancy, Arch. Neurol. & Psychiat. **63**: 611-644 (April) 1950.

TREATMENT OF BLASTOMYCOSIS WITH STILBAMIDINE

REPORT OF A CASE

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Edward D. Levy, M.D.
and
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As systemic blastomycosis is a relatively uncommon, but frequently fatal, disease for which no satisfactory treatment has been available, the need for evaluation of new methods of therapy is evident. The fungistatic properties of the diamidines in vitro was noted by Elson.[1] The successful clinical use of Stilbamidine (4,4′-stilbenedicarboxamidine) and Propamidine (4,4′diamidinodiphenoxypropane dihydrochloride) in the treatment of a single case of blastomycosis was reported by Schoenbach and co-workers.[2] As further evidence of the effectiveness of Stilbamidine, the following case is reported. In this case Stilbamidine alone was used without adjuvant therapy and was given continuously as a single course over a prolonged period. For the sake of brevity only data pertinent to the diagnosis and treatment of blastomycosis will be given.

REPORT OF A CASE

A 53-year-old Negro man had lesions that began in March, 1948, on the face and then spread to the neck, back, chest, forearms, and thighs during the next few months. He had had a progressively increasing cough with thick purulent sputum since November, 1948. Physical examination revealed sharply marginated granulomatous skin lesions in the above-mentioned areas measuring 4 to 8 cm. in diameter. Miliary abscesses were noted on the borders of the lesions (fig. 1*A*). Temperature was 99.4 F. Evidence of consolidation of the upper lobe of the right lung was present. Significant laboratory data included the following findings: (1) Direct smears on numerous occasions from the skin lesions showed Blastomyces dermatitidis. (2) Cultures were positive for B. dermatitidis from both cutaneous lesions and sputum. (3) The complement fixation test for blastomycosis was positive in a dilution of 1:1280. (4) An intracutaneous blastomycin test revealed a 3 mm. papule. (5) Histological section of a skin lesion revealed pseudoepitheliomatous hyperplasia and abscesses containing

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The Stilbamidine used in this study was supplied by the Wm. S. Merrell Company, Cincinnati.

1. Elson, W. O.: The Antibacterial and Fungistatic Properties of Propamidine, J. Infect. Dis. **76**: 193 (May-June) 1945.
2. Schoenbach, E. B.; Miller, J. M.; Ginsberg, M., and Long, P. H.: Systemic Blastomycosis Treated with Stilbamidine: A Preliminary Report, J. A. M. A. **146**: 1317 (Aug. 4) 1951.

giant cells. B. dermatitidis was seen within and outside the giant cells (fig. 1*B*). (6) X-ray examination of the lungs showed extensive dense infiltration throughout the right upper lobe, which was thought to be consistent with the lesions of blastomycosis.

The following therapies were used prior to the use of Stilbamidine: (1) Streptomycin, 4 gm. daily from July 10 to July 25, 1948, had no effect. (2) Syrup of potassium iodide up to doses of 24 gm. per day was given intermittently over a period of three years with possibly some involution of the lesions but no striking change, in spite of the fact that one of the courses on this high dosage of iodide was continuous for a period of three months. This medication was tolerated extremely well. At one time there was a flare-up of the skin lesions accompanied by fever during iodide therapy, although the chest film showed some involution. (3) A desensitization regimen was carried out with autogenous vaccine for a period of nine months with equivocal results, although this was not taken with too much regularity. (4) X-ray therapy to individual lesions in doses of 600 to 1,500 r with 2 mm. Al filtration caused temporary clearing of the skin lesions. Unfortunately new areas of involvement appeared and some of the older ones broke down into recurrent blastomycotic granulomas.

From July 10, 1948, to Feb. 2, 1952, the longest period of time during which no active cutaneous lesions were noted was three months. The cough and expectoration fluctuated in severity but were almost constantly present. On Jan. 29, 1952, x-ray films demonstrated that the process in the right upper lobe was denser and both lungs showed nodular confluent infiltration throughout the hilar regions. There was marked progression of the process since the film of January, 1950.

On Feb. 2, 1952, the patient was admitted to Norfolk General Hospital for treatment with Stilbamidine after preliminary studies revealed no apparent contraindications to therapy. The dosage schedule consisted of 50 mg. of Stilbamidine given in 100 cc. of 5% glucose on the 1st day, 100 mg. of Stilbamidine in 100 cc. of 5% glucose on the 2nd day, and on the 3rd to the 29th day 150 mg. of Stilbamidine was given daily in 500 cc. of 5% glucose. Therapy was completed on March 15, 1952. Throughout treatment the patient received a low-purine, low-protein diet as suggested by Schoenbach and others on the supposition that this favors the action of Stilbamidine.

Fig. 1.—*A*, appearance of patient with blastomycosis at time of first observation, March, 1948. *B*, skin biopsy, showing an organism within a giant cell.

Figure 2*A* shows the activity of the lesions before treatment, and figure 2*B*, the appearance seven months after treatment. Clinical improvement was apparent after about one week. After completion of the treatment with Stilbamidine the lesions were almost healed and complete involution took place approximately three weeks after therapy was stopped. The cough diminished and then disappeared for the first time in four years.

X-ray examination of the chest on Feb. 27, 1952, revealed marked clearing of the confluent nodular lesions, bilaterally. On Oct. 1, 1952, a repeat x-ray film showed further regression of the lesion in the right upper lobe. Complement fixation titer dropped to 1:20. There was no recurrence of cutaneous lesions or cough in a 13 month follow-up period. This was noteworthy,

Fig. 2.—Appearance of patient with blastomycosis. *A*, February, 1952, before treatment with Stilbamidine. The heavy beard covers extensive involvement of the chin. *B*, seven months after treatment with Stilbamidine.

since at no earlier time had the cough and skin lesions completely disappeared except temporarily during a three month period of intensive x-ray therapy.

SUMMARY AND CONCLUSIONS

A patient with systemic and cutaneous lesions of blastomycosis was treated daily with intravenous administration of Stilbamidine for 29 days. All cutaneous lesions and systemic symptoms of blastomycosis disappeared following this therapy. This treatment followed a four year period of observation and trial of standard forms of therapy. During this time there was progression of the cough and pulmonary involvement as well as periodic recurrence of the skin lesions. There was no toxic reaction to Stilbamidine. This patient was able to resume his normal occupation during the entire post-treatment observation period of 13 months. While it is difficult to assume that this result demonstrates a complete cure in a condition such as blastomycosis, which notoriously tends to recur, it certainly can be stated that the use of Stilbamidine produced a more effective remission in this case than any of the formerly recommended methods of treatment.

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Immunity to Smallpox.—Recent experience indicates that today a significant percentage of the population is not immune to smallpox. In connection with an outbreak of this disease in the city of New York in 1947, mass vaccination was carried out. A survey of the records, made subsequently, led to the general conclusion that only about one-quarter of our population can be expected to have solid immunity. The occurrence of scattered outbreaks of smallpox in various parts of the world, including the United States, would tend to support such a conclusion. A minor epidemic of smallpox which occurred in Brighton, England, during 1950-1951, brought to light the rather surprising fact that, of the entire staff of the isolation hospital, comprising 110 persons, fully one-quarter had never been vaccinated. In this particular outbreak in Brighton, there were twenty-nine confirmed cases; ten of the twenty-nine patients died.—R. J. Blattner, M.D., Immunity to Smallpox, *Journal of Pediatrics*, October, 1952.

NONTRAUMATIC SUBLUXATION OF THE ATLANTO-AXIAL ARTICULATION

REPORT OF A CASE

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Harry Bloch, M.D.
and
Abel Kenin, M.D., Brooklyn

On encountering an instance of nontraumatic subluxation of the atlanto-axial joint, we noted that some of its features resembled those of transient synovitis of the hip joint. We decided to explore the mechanism and history of this cervical condition in order to determine whether it might have the same underlying cause as transient hip synovitis.

REPORT OF A CASE

A white boy, aged 7 years, was admitted to the hospital on June 6, 1951. His mother reported that three weeks before admission the child suffered from an upper respiratory infection and enlarged cervical nodes, for which he was given antibiotics. A week later, the child began to tilt his head to the right and suffered severe pain when he attempted to raise or turn his head. Examination showed that the child tilted his head sharply to the right, with his chin pointing upward and to the left. The normal cervical lordosis was completely obliterated. Extreme tenderness was present over the spines of the first two cervical vertebrae, and there was moderate tenderness to the right and left of the first to third cervical areas. There was no tightness of the sternomastoid muscles. By tilting his head in the manner described, the child had achieved minimal mobility. Any attempt to test the range of motion of his head was resisted because of evident pain. There was no cervical adenopathy. The child's temperature was 37.6 C (99.7 F). The urinalysis and blood cell count were normal. A roentgenogram of the cervical spine, including an open mouth view (fig. 1), revealed a shift of the first cervical vertebra approximately 3 mm. to the right, with widening of the first left atlanto-axial articulation. There was no evidence of necrosis or erosion. A diagnosis of nontraumatic subluxation of the atlanto-axial articulation was made, and the child was placed in 4 lb. of cervical traction. Traction was increased gradually to 6 lb. and so maintained for 12 days. Reduction of the dislocation was demonstrated roentgenographically (fig. 2). The neck was immobilized in a plaster Minerva collar applied with traction maintained, and the child was discharged from the hospital. One month later, the plaster cast was removed. The head was not tilted, but slight atrophy of the neck muscles was observed as a result of immobilization. The cervical spine soon showed normal lordosis, and painless motion was possible in all directions.

COMMENT

The atlanto-axial articulation comprises three joints.[1] There is a pivot joint between the odontoid process or dens of the axis and the ring formed by the anterior arch and the transverse ligament of the atlas. There are gliding joints between the articular surfaces of the atlas and axis. They, the atlas and axis, are connected by articular capsules and by the transverse ligament of the atlas. The articular capsules are thin and loose and surround the joints between the articular surfaces. Anteriorly, the two vertebrae are connected by a continuation of the anterior longitudinal ligament. In this position, it is a strong membrane fixed above to the lower border of the anterior arch of the atlas and below to the front of the body of the axis. It is strengthened in the midline by a rounded cord that connects the tubercle on the anterior arch of the atlas to the body of the axis. Posteriorly, the atlas and axis are joined by a broad, thin membrane attached above to the lower border of the posterior arch of the atlas and below to the upper edges of the laminas of the axis. The transverse ligament of the atlas has a thick, strong band that arches across the ring of the atlas and retains the dens of the axis in contact with the anterior arch. As it crosses the dens, a small fasciculus is extended upward and is attached to the occipital bone. Another fasciculus is extended downward and is attached to the posterior surface of the body of the axis. The transverse ligament divides the ring of the atlas in two unequal parts. Of these, the posterior and larger surrounds the spinal medulla and its membranes and the spinal parts of the accessory nerves. The anterior and smaller portion

Fig. 1.—*A*, roentgenogram, open mouth view, showing shift of first cervical vertebra to right and widening of the first left atlanto-axial articulation. *B*, lateral view of cervical spine demonstrating anterior subluxation of the first cervical vertebra associated with reversal of cervical lordosis.

contains the dens. The inferior articular facets of the atlas, flattened or slightly concave, are circular and are directed downward and medially. They articulate with the circular, roughly convex, superior facets of the axis that are directed upward and a little laterally. From the nature of these articulations, it may be seen that the articular facets are well suited for gliding on one another. In fact, it is easy to understand how the flattened inferior articulating surface of the atlas can slip from its normal position on the almost flat superior articulating surface of the axis.

Three types of subluxation have been described,[2] anterior unilateral, posterior unilateral, and anterior bilateral. The important factor in unilateral subluxation is rotation of the head in a set position with no spasm of the cervical muscles on the side toward which the occiput is turned. In bilateral anterior subluxation, forward tilting of the head without rotation is observed. In both anterior types, a bulge is palpable in the nasopharynx that is due to the protrusion of the anterior surface of the dislocated atlas.

From the Pediatric and Orthopedic Services, the Beth-El Hospital.

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Routine roentgenographic examination often will not disclose this condition unless an anteroposterior view with the mouth open is included. The open mouth allows good visualization of the facet articulations and of the odontoid process of the axis. The atlas may be tilted as in the patient reported, and there may be a reduction or obliteration of the joint space on the affected side.

Several theories have been advanced concerning the cause of nontraumatic atlanto-axial subluxation. Wittek [3] indicated that distention of the capsule by fluid resulting from metastatic infection of the joint between the articular facets of the atlas and axis is responsible for the subluxation. Jacobs,[4] in 1918, compared this type of subluxation with that of the hip, which occurs occasionally in typhoid fever. He agreed with Wittek's theory of metastatic infection.

Fig. 2.—Roentgenogram, open mouth view, showing reduction of lateral displacement of first cervical vertebra.

The transverse ligament has been considered by some authors in the causation of atlanto-axial subluxation. In 1830, Bell [5] reported an instance of a pharyngeal ulcer associated with a cervical infection that resulted in erosion of the transverse ligament. Subluxation of the atlas on the axis occurred and was followed by respiratory failure from pressure on the spinal cord. Involvement of the transverse ligament is considered important by Jones.[6] He cites an instance in which a nurse was dressing a draining sinus in the neck of a girl suffering from tuberculous cervical glands and secondary pyogenic infection. When the nurse applied pressure to the girl's cheek, the girl promptly died because the odontoid process had compressed the cord. Watson-Jones believed that hyperemia causes decalcification of the bone so that it no longer affords secure attachment to the transverse ligament. He showed a roentgenogram of a severely decalcified atlas and called the condition spontaneous hyperemic dislocation of the atlas. We believe that, in addition, there must be marked laxity of the capsule of at least one of the articular facet articulations.

In our patient, subluxation occurred approximately one week after an infection of the throat and cervical glands. This interval has been reported as varying from one day to several weeks.[7] Roentgenograms taken through the open mouth revealed a subluxation. Treatment consisted of traction followed by fixation. Complete anatomic and functional return of the joint to normal was obtained. This sequence of events—infection of the upper respiratory area followed after an interval by a joint affection occurs in transient synovitis of the hip joint, an allergic manifestation.[8] Thus, in nontraumatic atlanto-axial subluxation, one may also be dealing with transient synovitis of the atlanto-axial joint with an effusion caused by hypersensitivity. This possibility is further supported by the report of this cervical subluxation developing in a boy with no history of recent or concomitant infection, the day after an injection of pertussis vaccine.[2]

SUMMARY

A case of nontraumatic subluxation of the atlanto-axial joint is reported. The anatomy of this articulation is reviewed. Several theories for the underlying cause of atlanto-axial subluxation are considered. Effusion into the atlanto-axial joint as a result of hypersensitivity is suggested as a possible causative factor.

699 Ocean Ave. (26) (Dr. Stein).

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4. Jacobs, C. M.: Atlas and Axis Luxation, Am. J. Orth. Surg. **16**: 357, 1918.

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6. Jones, R. W.: Spontaneous Hyperemic Dislocation of the Atlas, Proc. Roy. Soc. Med. **25**: 586, 1932.

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Early Ambulation.—An extremely significant phase of postoperative care is early ambulation which, in order to be effective, must be a systematic and planned program. One must never forget that the fundamental purpose of getting the patient on his or her feet is to initiate early muscle function with its beneficial side effects on vascular flow and various visceral metabolic activities. In the fervor of enthusiasm for early ambulation one should pause occasionally and take inventory to make sure that the plans undertaken actually are working out to the patient's benefit. Most of us have observed the spectacle of a staggering, pale, postoperative patient practically carried by a fluttering retinue of nurses, shuffling along a hospital corridor in complete exhaustion, giving scant heed to the encouraging verbal supervision of the surgeon; and this, all done in the name of intelligent medical care. How much more might have been accomplished by supervised exercises carried out in bed until the patient had gained sufficient strength for ambulation! Taking postoperative patients out of bed only to prop them up in chairs cannot be misconstrued as ambulation; in fact, such a practice, especially if the front edge of the chair causes pressure against the posterior aspect of the thigh, may actually be harmful and conducive to venous stagnation and thrombosis.—M. A. Casberg, M.D., Postoperative Care, *Surgery*, February, 1953.

SPONTANEOUS IDIOPATHIC BILATERAL ADRENAL APOPLEXY ASSOCIATED WITH HYPERTENSION

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Although bilateral adrenal hemorrhage has been commonly found at the postmortem examination of a person who died suddenly, it has been associated with meningococcemia or other sepsis,[1] pregnancy,[2] the neonatal state,[3] heparin therapy,[4] or leukemia.[5] Standard textbooks refer only to these primary causes.[6] Unilateral adrenal apoplexy complicating hypertension is also rare but several cases were reported in 1945 by Edelman.[7] In 1947, McMillan [8] presented the case of a 60-year-old-white man who was hospitalized because of severe epigastric pain and a blood pressure of 210/110 mm. Hg. The day after his admission, the patient's blood pressure suddenly fell to 96/50, with a weak and irregular pulse, and a high temperature developed. On the third day, the blood pressure dropped to 52/32, and the patient died. Autopsy revealed massive hemorrhage of both adrenal glands and a heart that weighed 500 gm. The arterioles of the adrenal capsules were hyalinized, and several small veins of the pericapsular tissue were filled with recent thrombi. It is probable that these thrombi and the sudden development of high temperature indicate an underlying sepsis. Earlier, in 1941, Leone [9] recorded a case of a man in whom spontaneous bilateral adrenal hemorrhage was associated with a purpuric eruption of undetermined origin. This too points to an underlying infectious process or hemorrhagic diathesis.

REPORT OF A CASE

This 52-year-old white steel worker was admitted to the hospital on March 11, 1952, because of generalized "arthritic" aches and pains that had been present for a number of months together with severe headaches. The patient's blood pressure was 210/130 mm. Hg; his temperature, pulse, and respirations were normal on admission. There were no significant laboratory findings other than a blood urea of 51 mg. per 100 cc. and albuminuria 4+, with a few red and white blood cells in the sediment. Both the electrocardiogram and chest films were normal. A roentgenogram of the abdomen revealed only distention of the large and small intestine. Corticotropin (ACTH), in doses of 50 mg. three times a day, was administered intramuscularly for two days and then in doses of 25 mg. three times a day, for three days. Several days after admission, increasingly severe intestinal distention developed, for which a Miller-Abbott tube was inserted. On the seventh day of hospitalization, the patient abruptly became semicomatose and cyanotic. There was also a sudden fall in the blood pressure to 104/70. The abdominal distention relaxed, and respirations ceased five hours after the onset of this episode.

The important gross findings at autopsy were that the lungs were extremely hyperemic, and from the cut surfaces exuded frothy fluid; the heart weighed 450 gm. and was hypertrophied chiefly on the left side; the adrenal glands were tremendously enlarged, each about 8 cm. (3⅛ in.) in diameter; and there was extensive perirenal extravasation of fresh blood that infiltrated the upper portion of the renal capsules. On cross sections of both the kidneys and the adrenals there was virtually complete destruction of the adrenal cortices and medullas and only an extremely thin rim of cortical tissue surrounding the clotted blood. The renal cortices measured approximately 1.2 cm. in thickness, and the capsules could be stripped with ease to reveal pale subcapsular surfaces with punctate hemorrhages scattered throughout. These hemorrhages were also present throughout the cortical tissue on cross section. The left kidney and adrenal gland together weighed 320 gm., while the right kidney and adrenal gland weighed 350 gm. On microscopic examination, the lungs displayed marked edema and alternate emphysema and atelectasis. The cardiac muscle fibers and nuclei were large and bizarre, and there were small areas of interstitial fibrosis. Some of the coronary arteries had thickened walls caused by intimal hyperplasia. Very little recognizable adrenal tissue was present, practically all of the cortical and medullary substance had been replaced by hemorrhagic material. In one area, a small remnant of intact cortical tissue was seen that was infiltrated with erythrocytes and undergoing various degrees of necrosis. Thrombosed vessels were not noted. The renal interstitial tissue was markedly edematous, and most of the cortical blood vessels were in various degrees of concentric intimal proliferation from slight thickening to complete occlusion. In some areas, arteriolar walls and lumens were destroyed, and basophilic "smudges" remained. In these areas were hemorrhagic extravasation and endothelial proliferation of the glomerular capillaries and obstruction of the lumens. The parietal layers of Bowman's capsule were thickened by fibrosis. The tubules were in several degrees of atrophy and dilatation; the cells, for the most part, were flatter than normal and indistinctly outlined. Numerous hyalin casts were present in the renal tubules, and diffuse and focal collections of eosinophils and lymphocytes were present in the interstitial tissue.

External surfaces (on left above and below) and longitudinal sections (on right above and below) of adrenal glands and kidneys showing hemorrhage.

From the laboratories of the Conemaugh Valley Memorial Hospital.

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SUMMARY AND CONCLUSIONS

A case of bilateral adrenal hemorrhage associated with arteriolonephrosclerosis is reported and is of interest because of its extreme rarity. No similar instance could be found in an exhaustive study of the literature. Any attempt to relate adrenal apoplexy to the arteriolar damage of the malignant nephrosclerosis and to the administration of corticotropin (ACTH) would be mere speculation. It is felt, however, that when sudden and dramatic declines in blood pressure occur in patients with hypertension who are not afflicted with coronary occlusion, adrenal apoplexy should be suspected as the cause.

85 Colgate Ave.

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JEJUNAL STRICTURE DUE TO INGESTION OF AMMONIA

REPORT OF A CASE COMPLICATED BY SEVERE POTASSIUM DEFICIENCY

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Ingestion of a caustic substance, such as lye or ammonium hydroxide, frequently results in ulcerative esophagitis and esophageal stricture. Although cases occasionally have been reported of pyloric stricture due to alkali poison, in general, gastric lesions more frequently follow ingestion of strong acids than of alkalies.[1] Lesions of the small bowel following ingestion of either acid or alkali are rare. Review of the literature disclosed only two cases of jejunal lesions due to alkali poisoning [2]; both were fatal. No report of a nonfatal case could be found. The case described in the present communication appears to be unique in that a corrosive esophagitis and jejunitis coexisted, with no gross lesion of the stomach or duodenum. Successful resection of a jejunal stricture was accomplished 67 days after ingestion of the poison. In addition, this case is of interest because of the development of a severe, almost fatal potassium deficiency following a prolonged period of unrecognized high intestinal obstruction.

REPORT OF A CASE

A 34-year-old Puerto Rican housewife was admitted to the Bellevue Hospital Psychiatric Division on Dec. 27, 1949, eight hours after having ingested 3 or 4 oz. (90 or 120 cc.) of household ammonia in a suicide attempt. Physical examination on admission revealed a short, thin woman. The pulse rate and blood pressure were not obtainable. The mucous membranes of the mouth and pharynx were red. The heart and lungs were normal, except for a ventricular rate of 120 beats per minute. The abdomen was tender and spastic in the epigastrium. No bowel sounds were audible. Deep tendon reflexes were equal and active. The hemoglobin level was 15.5 gm. per 100 cc. (Sahli); the white blood cell count was 15,500 per cubic millimeter; results of urinalysis were normal; and the Wassermann test reaction was 4+.

The patient was given vinegar to drink promptly on admission to the hospital, eight hours after taking the ammonia. On a regimen of bed rest, sedation, and administration of 3,000 ml. of fluids intravenously, including 500 ml. of plasma, the patient's condition improved. Thirteen hours after admission, the blood pressure was 110/72 mm. Hg and the pulse rate 108. During the next two days, the abdominal tenderness increased and distention occurred. The temperature rose to 101 F. The patient was carefully observed for possible gastrointestinal perforation. Suction with a Wangensteen tube and administration of fluids and whole blood transfusions resulted in improvement of the abdominal signs, although stool examination revealed a 4+ reaction to the guaiac test. Daily bougienage of the esophagus was begun on the sixth day to prevent esophageal stricture. On the 19th day, esophagoscopic examination revealed numerous burned areas extending from the cricopharynx to the cardia. They were covered with slough. On the 24th day, nausea and vomiting were first noted. The abdomen was soft and nontender. The vomiting persisted, and parenteral administration of fluids was begun on the 41st day. The following week, bile was noted in the vomitus, and an organic intestinal obstruction located beyond the pylorus was first suspected. Meanwhile, the patient's condition had deteriorated. She became mentally depressed and appeared cachectic. Her weight had dropped from 90 to 53 lb. (40.8 to 24 kg.).

Gastrointestinal roentgenograms on the 60th day revealed a normal stomach and duodenum. The distal duodenum and proximal 5 in. (12.7 cm.) of jejunum were greatly dilated. Just distal to this dilated segment was an area of marked narrowing and irregularity, which permitted almost no barium to pass.

On the 61st day, the patient was first seen by one of us (J. L. C.). It was noted that she was severely undernourished and almost comatose. The skin and muscles were putty-like on palpation, owing to the loss of turgor. The tongue did not appear to be dry. The deep tendon reflexes were not obtainable. The patient's condition appeared critical, and several observers felt that an operation to establish a feeding jejunostomy distal to the obstruction was urgently needed. In reviewing the patient's electrolyte status, however, it was noted that she had a severe metabolic alkalosis. The patient had been maintained parenterally on an average intake of 12 gm. of sodium chloride and 2,000 ml. of water per day for about 10 days before this date (see table). She had taken no food by mouth and was vomiting only occasionally. For a patient whose normal weight is 90 lb. this represents a considerable intake of salt. Her daily urinary output had been consistently over 1,000 ml. Because it was felt that a primary metabolic alkalosis should not have persisted in the presence of an adequate salt intake, it was suspected that this represented the alkalosis of potassium deficiency, which is notable for its failure to respond to sodium chloride therapy. This suspicion was supported by the fact that the patient had taken almost no food by mouth during the previous four week period. No potassium had been given parenterally. The diagnosis of potassium deficiency was confirmed by typical electrocardiographic changes of marked degree. The serum potassium level was found to be 2.4 mEq. per liter. The patient was given 120 mEq. (9 gm.) of potassium chloride intravenously over two and one-half days. The salt and water intake was not changed from that that the patient had been receiving prior to potassium therapy. A dramatic clinical improvement occurred. The patient became ambulatory and mentally alert. Within 48 hours of the onset of potassium therapy, the serum chloride level rose almost to normal, even though the salt intake had not been increased. The patient gained 11 lb. (5 kg.) as a result.

From the Department of Surgery, New York University Post-Graduate Medical School, and the Fourth Surgical Division of Bellevue Hospital.

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On the 67th hospital day, a laparotomy was performed. There was about 500 cc. of clear fluid in the peritoneal cavity. No lesion of the stomach or duodenum was found. A 9 in. (22.9 cm.) segment of thickened, indurated, and inflamed jejunum was resected beginning at a point two inches beyond the ligament of Treitz. This represented the site of an almost complete obstruction. The bowel proximal to this lesion was dilated to more than twice the normal diameter, and the bowel wall was slightly edematous (fig. 1). A primary end-to-end closed anastomosis was made by means of one layer of interrupted Halsted sutures, utilizing the Furniss clamp. The patient's postoperative course was uneventful. She received a soft diet on the first postoperative day and began having spontaneous bowel movements at this time. Gastric analysis 26 days after operation revealed no acid in the fasting specimen. One hour after histamine injection, there were 60 units of free acid. Esophagoscopic examination 88 days after ingestion of poison revealed a normal appearing mucosa throughout. At follow-up examination eight months later, the patient was asymptomatic and well nourished.

Pathological Report.—The specimen consisted of a 25.5 cm. portion of small bowel with attached mesentery and enlarged mesenteric lymph nodes (fig. 2). Beginning 4 cm. from the proximal end, there was a tubular constriction 12 cm. in length where the bowel had a slit-like lumen. The wall on section was three times thicker than normal, white, and firm. The mucosal surface had serpiginous ulcerations covered with a white slough in some areas. There were nodular elevations between the areas of ulceration. Microscopic sections revealed considerable thickening of the mucosa and submucosa with fibrous tissue. There was moderate infiltration with mononuclear cells and lymphocytes. The epithelium of the mucosa was simplified as though regenerated. Sections of the proximal and distal extremities of the excised bowel appeared normal. The lymph nodes contained many chronic inflammatory cells and were hyperplastic.

Fluid Balance Record During Immediate Preoperative Period

Hospital day	61	62	63	64	65	66	67*
Intake							
Water, ml.	2,000	2,000	3,000	2,000	3,000	2,500	3,000
Salt, gm.	11.5	11.5	11.5	11.5	11.5	11.5	7
Plasma, ml.	..	250	250	250	250	..	..
Blood, ml.	500	..	..	..	..	500	500
Potassium chloride, mEq.	..	..	..	30	60	30	..
Urine, ml.	1,000	1,325	1,150	950	1,100	1,270	..
Blood Chemistry Determinations							
Serum potassium, mEq./liter	..	..	..	2.4	..	4.4	..
Carbon dioxide combining power							
Vol. %	92	..	..	..	..	74	..
MEq./liter	41	..	..	..	..	33	..
Serum chloride							
Mg./100 cc.	426	..	..	..	..	542	..
MEq./liter	72	..	..	..	..	92	..
Body weight, lb.	56	..	..	..	..	..	67

* Day of operation.

COMMENT

The diagnosis of potassium deficiency was suspected in this case because of the observation of severe alkalosis failing to respond to parenteral sodium chloride solution infusions. With an obstruction distal to the pylorus, the vomitus would be expected to contain considerable amounts of pancreatic, duodenal, and biliary secretion, with alkali in the form of sodium bicarbonate as well as gastric hydrochloric acid. The loss of this combination of fluids should result primarily in salt-water deficiency and not in a profound disturbance of acid-base balance. It is remarkable how efficiently the serum chloride concentration was corrected in this patient simply by adding potassium to the previous regimen of parenterally administered fluids.

The cause of the potassium deficiency in this patient is easily explained by the prolonged period during which the patient failed to take any appreciable amount of food or drink by mouth. Also, during the time when fluids were given parenterally potassium was omitted from the fluid. Even though the volume of vomitus and the amount of potassium lost in the vomitus may not have been great, the continuous urinary excretion of potassium over a period of weeks without replacement is certainly sufficient to explain the development of a serious deficiency.

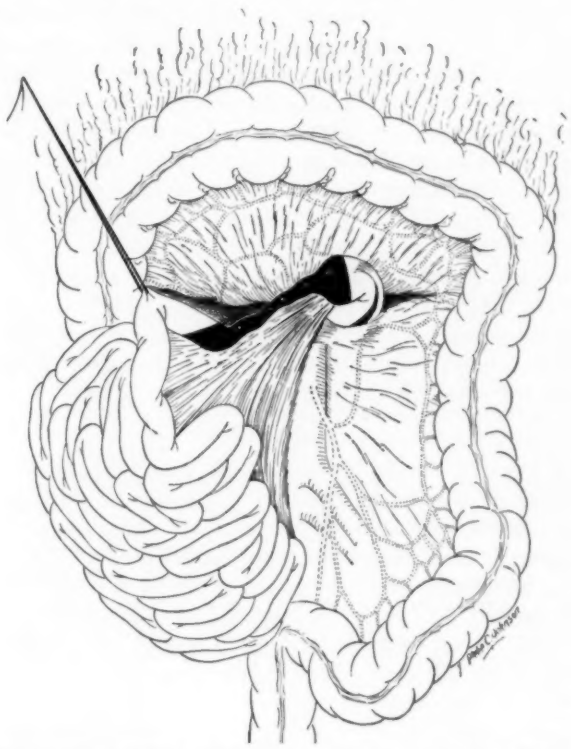

Fig. 1.—Location of the stricture with relation to the ligament of Treitz. The proximal jejunum is greatly dilated.

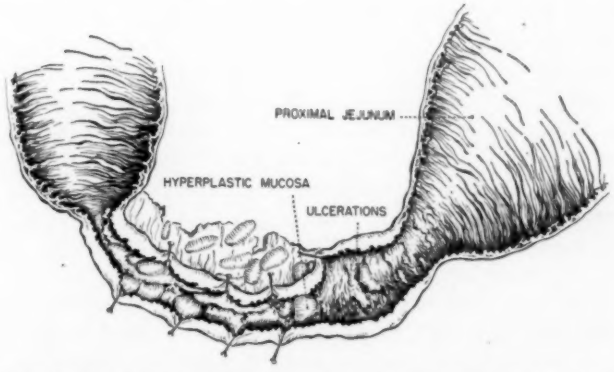

Fig. 2.—Specimen removed at operation; note marked thickening of the jejunal wall, ulcerations of the mucosa, and hyperplastic lymph nodes.

The peculiar distribution of the pathological changes in this patient, whose esophagus and jejunum were damaged but whose stomach and duodenum were spared, is

puzzling. The jejunal damage may be explained in part as the result of fasting gastric anacidity with failure of neutralization of the ammonia. This is substantiated by the fact that the poison was taken at 3 a. m. on an empty stomach; however, this does not explain the apparent lack of damage to the stomach and duodenum, unless there did occur a superficial gastritis and duodenitis that had completely healed by the time laparotomy was performed. Franzas,[2] in a comprehensive review of caustic poisoning in Finland, found that acids appeared to produce severer damage in the stomach and small intestines than did alkalies. Poisoning with acid produced fatal perforations of the stomach in one patient and of the stomach and duodenum in another and a corrosive gastroenteritis of the stomach and small and large bowel in a third. Ingestion of alkali in three fatal cases showed involvement of the esophagus and duodenum in one and of the esophagus, stomach, and jejunum in two others. It is postulated that the presence of food in the stomach is an important factor in protecting this organ.

SUMMARY

A case of corrosive esophagitis and jejunitis, with subsequent jejunal obstruction, following the ingestion of household ammonia, is reported. No involvement of the stomach or duodenum could be detected at laparotomy. Successful primary resection of the jejunal lesion was carried out. A severe hypokalemic hypochloremic alkalosis developed following prolonged unrecognized partial high intestinal obstruction.

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SIMPLIFIED TREATMENT OF LACERATIONS OF THE RECTUM

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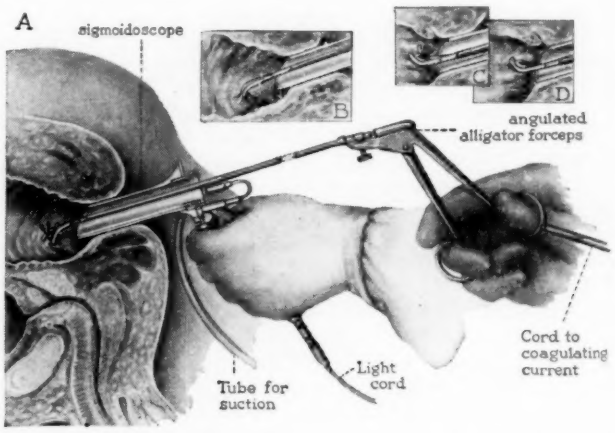
Lacerations of the mucosa and submucosal structures of the rectum following the insertion of enema tips, thermometers, and, occasionally, of suppositories occur more commonly than is universally recognized. Superficial lacerations of the anterior surface of the rectal mucosa are frequently observed in patients who are instructed to take cleansing enemas preliminary to endoscopy. These lacerations occur even when the preparatory enemas are given by trained personnel, including nurses. As a rule, these injuries heal spontaneously without incident unless preexisting rectal inflammatory disease or infection in the anal crypts or ducts exists. Occasionally, considerable bleeding occurs that requires urgent attention. In the past, because of failure of conservative forms of therapy, I have had to perform a hemorrhoidectomy because of persistent bleeding from a laceration into a hemorrhoidal varix that was produced by an enema tip in a patient who took enemas often. In another similar situation, packing with thrombin-soaked absorbable gelatin sponge (gelfoam®) controlled the bleeding, but a transfusion of 500 cc. of citrated blood was nevertheless necessary.

Similar lacerations have been observed following the introduction of thermometers either by the patient or attendants. In one case of bleeding produced by laceration of an internal hemorrhoid that was caused by a self-introduced clinical thermometer, I found it necessary to give blood by transfusion to the patient and to operate for the control of continued bleeding.

Superficial injuries to the anal canal have followed the insertion of suppositories. These injuries may be produced either solely by the suppositories and/or by the fingernails incident to the act of insertion of suppositories.

The purpose of this communication is to describe a simple method of treatment of profuse rectal bleeding caused by lacerations that are produced by the insertion of foreign bodies.

Instrument.—The instrument used embodies the rotating mechanism at the handle so that the insulated shaft may be rotated 360 degrees.[1] Its end is angulated or curved and consists of a stationary and movable blade, which opens and closes sidewise. The inner surfaces of the blades are serrated, making possible perfect approximation and a resulting firm grasp of objects in contact with the blades. The blades may be activated electrically through an inlet situated in the handle and connected by a cord to an electrosurgical generator (figure). This instrument has many other uses, which are described elsewhere.[2]



Use of the forceps described with a sigmoidoscope in treatment of bleeding lacerations of the rectum.

Technique.—In the figure (*A*) a small, deep, actively bleeding perforation is illustrated that occurred in a man who often used suppositories. To overcome difficulties of introduction of a suppository into the rectum, he inserted the sharp point of a pencil into the base of a suppository and thus attempted to advance it beyond the anal canal. During this maneuver the pencil slipped inadvertently into the rectum, causing sharp pain that was followed by tenesmus and gross bleeding. After an interval of some eight hours he presented himself at my office primarily because of continuing bleeding. Endoscopy revealed an ampulla full of small and large recent blood clots as well as free blood. After evacuation of the clots and most of the blood, a small opening in the mucosa was noted on the anterior surface of the rectal wall about 3 to 4 cm. from the dentate line. Blood was

1. Turell, R.: New Rectosigmoidal Biopsy Forceps, Ann. Surg. **116**: 637 (Oct.) 1942.
2. Turell, R.: Treatment in Proctology, Baltimore, Williams & Wilkins Company, 1949.

spurting freely from the opening. Since the bleeding could not be controlled either by pressure with a cotton ball in an alligator forceps held against the opening nor by desiccation about the opening with ball-tipped or wire electrodes, I grasped and compressed the mucosa and submucosal structures about the perforation with the tip of the instrument described (*B*). This maneuver controlled the bleeding at once but it recurred on release of the blades and removal of the instrument. The instrument was then reapplied, and the mucosa with the submucosal structures was compressed and coagulated, using a spark gap current obtained from a portable electrosurgical unit. This procedure brought about permanent control of the bleeding. The coagulated area sloughed away within a fortnight and was completely and unrecognizably regenerated within about three weeks.

In another case a horizontal, somewhat deep, laceration of an internal hemorrhoid was treated (*C* and *D*). This laceration was the result of inexpert insertion of a clinical thermometer by a patient. A similar laceration in another person followed the use of a dry or unlubricated thermometer. In either case, bleeding could not be controlled by packing nor by the application of hemostatic agents. In both of these instances, however, the bleeding was effectively and promptly controlled when the mucosa and submucosal structures were grasped and compressed about the laceration with the curved part of the angulated end of the instrument (*D*). Since compression alone for some five minutes had failed to stop the bleeding permanently, the blades were activated with a spark gap coagulating current. This resulted in prompt and permanent control of the bleeding and uneventful healing of the treated area.

SUMMARY

An instrument and a simple form of therapy for the control of rectal bleeding produced by foreign bodies are described and illustrated.

25 E. 83rd St. (28).

Medical Discoveries.—If I were asked what single factor had contributed most to medical discovery, I should reply "chance." But I should hasten to qualify this by saying that the gifts which that Fairy Godmother brings only come to those who are industrious in using them and whose minds are ready to receive them. . . . This association of chance with an ability to recognize the gift, if and when it comes, has impressed all who have been interested in the history of discovery and has, perhaps, been best put into words in the celebrated saying of Pasteur, that "In the field of observation chance favours only the prepared mind." And I would go yet further and add that the boundaries of any discovery are set by the limits of the technical resources of the time. Technical methods are the necessary handmaidens of the research worker, but in saying this I would state immediately that elaborate technical methods are most certainly not necessary to the discovery of new facts, any more than they are necessary to the evolution of new ideas; indeed, they may by their very elaboration become a bar to progress. By all means let us employ instruments of precision if we have them, but let us not throw up our hands in despair if they are out of our reach. "The machine," said Chesterton's Father Brown, "cannot lie. Neither can it tell the whole truth."—J. H. Dible, Chance, Design and Discovery, *The Postgraduate Medical Journal*, February, 1953.

CORTICOTROPIN (ACTH) THERAPY IN GUILLAIN-BARRÉ SYNDROME

REPORT OF A CASE

Lieut. James A. Newey
and
Lieut. Robert I. Lubin, (MC), U.S.A.F.

This report presents a case of Guillain-Barré syndrome that responded markedly to intravenous corticotropin (ACTH) therapy. To our knowledge there are only two other reports of the use of corticotropin in this condition at the time of this writing.[1]

REPORT OF A CASE

A 22-year-old married staff sergeant was admitted to the U. S. Air Force Hospital, at Fairchild, Wash., for the first time on May 26, 1952, complaining of numbness of the extremities. The patient stated on admission that he had been perfectly well until two weeks prior to his admission when he noticed one morning on awakening that there was definite numbness and tingling in the palms of both hands. The following day he noticed numbness of the skin of both feet and ankles; this progressed to just below the knees bilaterally. He also noted definite difficulty in ascending stairs, both because of weakness of the lower extremities and also because of difficulty in controlling his leg movements. On two occasions while at home he stumbled without apparent cause and fell to the floor without serious injury. He also noted that when he would attempt to lift objects and hold them in his hands he was unable to do so securely and frequently dropped them. He had difficulty in doing such daily tasks as brushing his teeth, eating, and picking up a pencil to write his name. He denied any pain of the extremities. The only known antecedent illness occurred in the last three to four days in February, 1952, at which time a head cold developed while he was in New Mexico. He was given penicillin on three successive days for that illness. In March, 1952, he received a tetanus toxoid injection while in New Mexico.

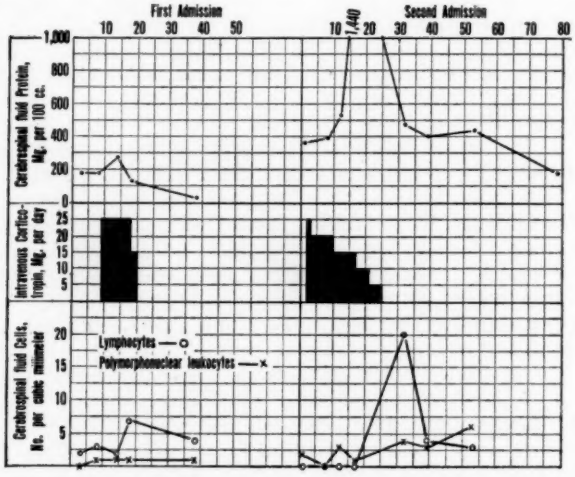
The systemic review and medical history, with the exception of those incidents already noted, were noncontributory. Physical examination on admission to the hospital revealed the patient's temperature to be 100 F orally, pulse 76 per minute, and blood pressure 120 mm. Hg systolic and 85 mm. Hg diastolic in the right arm, while he was sitting. The examination revealed a normally well-developed, well-nourished white man with no abnormalities except for those encountered in the neurological examination. The latter examination revealed an alert person who was oriented as to time, place, and person. Cerebellar and cranial nerve functions were intact. Sensory examination demonstrated the stereognostic and proprioceptive modalities to be significantly impaired distal to the mid forearm and in the distal third of the leg, whereas those of pain, light touch, and thermal sensation were only minimally impaired. Examination of the tendon reflexes demonstrated the biceps, triceps, and patellar reflexes to be just barely perceptible. The Achilles reflex was absent bilaterally, whereas the superficial reflexes were intact. There were no pathological reflexes. The laboratory data were as follows: An admission hemogram revealed a white blood cell count of 7,500 per cubic millimeter, with 61% neutrophils, 34% lymphocytes, 2% monocytes, and 3% eosinophils. The hemoglobin was 16.4 gm. per 100 cc. (spectrophotometric method using 0.1% sodium carbonate), the sedimentation rate 1 mm. per hour, and the hematocrit 50%. Admission urinalysis was within normal limits. The serologic test for syphilis was negative.

From the U. S. A. F. Hospital, Fairchild Air Force Base, Fairchild, Wash. Lieutenant Newey is Chief of Medical Service.

1. (*a*) Stillman, J. S., and Ganong, W. F.: Guillain-Barré Syndrome: Report of Case Treated with ACTH and Cortisone, New England J. Med. **246**: 293-296, 1952. (*b*) Seltzer, H. S.; Lichty, D. E., and Conn, J. W.: Case of Guillain-Barré Syndrome (Infectious Polyneuronitis) with Apparent Response to ACTH, Univ. Michigan M. Bull. **18**: 27-31, 1952.

On May 28, the third hospital day, a lumbar puncture was performed and the initial pressure was 160 mm. of water. The blood cell count revealed 2 lymphocytes per cubic millimeter, and the total protein determination was 180 mg. per 100 cc. The colloidal gold curve was 0000000000, and the spinal fluid Wassermann was negative. The patient continued to have some definite progression of paresthesia and muscular weakness in the extremities. He noted lack of coordination of the digital functions and some insecurity of balance when ambulatory. There were no bowel or bladder symptoms.

Neurological examination on June 3, the eighth hospital day, revealed the following changes: There was a definite tendency toward a positive Romberg sign. The heel-to-knee test revealed slight tremulousness, whereas the finger-to-nose test was done within normal limits. Sensory examination revealed proprioceptive and stereognostic modalities to be further impaired bilaterally. The motor examination demonstrated definite weakness in the upper and lower extremities, the most marked finding being the extreme weakness of grip, which was approximately 20% of normal. The reflexes were essentially unchanged. On that date a lumbar puncture was again performed; the spinal fluid protein was 180 mg. per 100 cc. and there were three lymphocytes and one polymorphonuclear leukocyte per cubic millimeter. A circulating eosinophil count revealed 330 cells per cubic millimeter, and fasting blood sugar was 98 mg. per


First Admission
Second Admission
Cerebrospinal fluid Protein, Mg. per 100 cc.
Intravenous Corticotropin, Mg. per day
Cerebrospinal fluid Cells, No. per cubic millimeter
Lymphocytes —o
Polymorphonuclear leukocytes —x

Changes in cerebrospinal fluid protein and cells in relation to administration of corticotropin on two hospital admissions.

100 cc. On the ninth hospital day corticotropin therapy was instituted, the patient receiving 25 mg. of corticotropin in 500 cc. of 5% glucose and water intravenously over an eight hour period (see figure).

Prior to the induction of the first corticotropin intravenous administration, the patient was asked to pick up a pencil and write his name; he was unable to grasp a pencil well enough to write. Within 30 minutes after the first injection was completed, the patient's grip was so much improved that he was able to pick up a pencil and write his name clearly. Daily circulating eosinophil counts were obtained, both prior to and following the intravenous administration of corticotropin. Throughout the period that he received the medication there was an excellent eosinophil response. The counts ranged from 44 to 110 per cubic millimeter. By the 11th hospital day, the patient continued to have dramatic improvement, as manifested by much improved muscle strength and a return of the sense of stereognosis. Paresthesia was definitely diminishing, although it was still present to a minor degree. On June 7, the 12th hospital day, the patient complained of a minimal amount of numbness of the face and the fourth and fifth left toes, but stated that the numbness had completely disappeared from his right foot. His hands were almost completely free of paresthesia, and his strength in all extremities was excellent. On June 9, the 14th hospital day, a lumbar puncture was again repeated, at which time there were three white blood cells seen under the microscopic examination, two of them being lymphocytes and one of them being a polymorphonuclear leukocyte. The spinal fluid protein level was 270 mg. per 100 cc. On that date the patient stated that his left foot was now completely normal, but he still had minimal paresthesia in the hands. A complete neurological examination was performed on June 12, at which time paresthesia was noted to be limited to the fingertips only, on the right. The strength was normal, and the reflex examination revealed the biceps and triceps response to be essentially unchanged on the right, but definitely improved on the left. The Achilles and patellar reflexes were now normal.

On June 13, the 18th hospital day, a lumbar puncture was again repeated; the spinal fluid protein was 137 mg. per 100 cc. and 12 white blood cells were seen in the microscopic examination: 7 of them were lymphocytes and 5 of them were polymorphonuclear leukocytes. On June 16, the patient stated that he had absolutely no sensation of numbness or tingling in any portion of his body, and his strength was still completely normal. The only significant changes in the reflexes were that the biceps and triceps responses were equal bilaterally and approaching normalcy. On that date the patient was allowed to be up in a chair and progressive graduated ambulation was instituted. On July 3, the 38th hospital day, a spinal fluid examination revealed a blood cell count of four lymphocytes and one polymorphonuclear leukocyte, and a protein count of 30 mg. per 100 cc. A neurological examination on that date was entirely normal. The patient was discharged from the hospital on July 14, 1952, on the 19th hospital day.

The patient was next seen on Sept. 22, 1952, at which time he complained of numbness of his fingertips and a sensation of having lost coordination of his legs. The symptoms were similar to those that he had had at the time of his previous hospitalization, except that they were less severe. They were of three weeks' duration. Physical examination, with the exception of the neurological examination, was within normal limits. The only significant finding on neurological examination was absent tendon reflexes. Laboratory findings including a complete blood cell count, urinalysis, and serology were normal. A spinal fluid examination on the day of admission revealed a spinal fluid pressure of 200 mm. of water, two to three polymorphonuclear leukocytes per cubic millimeter, a spinal fluid protein of 360 mg. per 100 cc., and normal sugar and chloride determinations. A culture was negative.

On Sept. 23, intravenous corticotropin therapy was again instituted. The initial dose was 25 mg. in 500 cc. of 5% glucose in water administered over an eight hour period. Within seven hours of the initiation of the corticotropin therapy the subjective symptoms disappeared and did not recur. Objectively it was noted that on Sept. 24, the third hospital day, and 24 hours after the beginning of treatment, the tendon reflexes were weakly positive. By the fifth hospital day, the tendon reflexes were normal and remained so except that rapid fatigability of the reflexes was demonstrable; however, on Oct. 9, the 18th day of hospitalization, the reflex fatigability could no longer be demonstrated. The patient was discharged asymptomatic from the hospital on Oct. 31, 1952. He returned to full duty as an electrician and was followed at weekly intervals in the outpatient clinic.

COMMENT

It is beyond the scope of this report to summarize completely the literature on Guillain-Barré syndrome. This has previously been done in several excellent reports.[2] Several authors have suggested the possible relationship of this syndrome to a hypersensitivity state.[3]

2. (*a*) Reitman, N., and Rothschild, K.: Non-Infectious Nature of Guillain-Barré Syndrome with Possible Explanation for Albumino-Cytologic Dissociation, Ann. Int. Med. **32**: 923-934, 1950. (*b*) Fox, M. J., and O'Connor, R. D.: Infectious Neuronitis: Review of Literature and Presentation of 4 Cases, Arch. Int. Med. **69**: 58-66 (Jan.) 1942. (*c*) Pullen, R. L., and Sodeman, W. A.: Infectious Polyneuritis (Guillain-Barré Syndrome), Am. J. M. Sc. **211**: 110-122, 1946.

3. (*a*) Stillman and Ganong.[1a] (*b*) Reitman and Rothschild.[2a] (*c*) Brain, W. R.: Diseases of the Nervous System, ed. 3, New York, Oxford University Press, 1947, pp. 795-798. (*d*) Pullen and Sodeman.[2c]

The works of Roseman and Aring[4] and Scheinker[5] have stressed the important role that edema of the nerve roots with secondary myelin degeneration and beading of the axone plays in disrupting the nerve function. This same edema may be responsible for the elevated spinal fluid protein by preventing the reabsorption of the larger protein molecules through the perineural spaces of the cranial nerves and spinal nerve roots.[2a] Whereas the cause of this edema is obscure, the pathological picture described[6] is not unlike that seen in the hypersensitivity group of diseases.

The encouraging results of the use of corticotropin and cortisone in diseases of hypersensitivity[6a] led Stillman and Ganong[1a] to use the steroids in a case of Guillain-Barré syndrome with promising results. The following differences between the case reported by Stillman and Ganong and the case herein reported should be cited: In the former the clinical improvement while receiving the steroid therapy was paralleled by a return toward normalcy of the spinal fluid protein, whereas in the present case no such correlation existed. Secondly, in the former case there was a clinical and laboratory relapse while on corticotropin therapy, which was later reversed by cortisone administration. In the present case, no such recrudescence occurred while on corticotropin therapy, but approximately 10 weeks after cessation of therapy, an apparent relapse developed as evidenced by the return of symptoms, areflexia, and spinal fluid changes characteristic of Guillain-Barré syndrome. Because of the significant mortality[7] and extreme morbidity associated with this condition[8] and the lack of a specific therapeutic agent, it is hoped that other reports of the use of corticotropin and the cortical steroids in this syndrome will be forthcoming.

SUMMARY

A case of Guillain-Barré syndrome treated intravenously with corticotropin is reported. There was a dramatic improvement in the symptomatology and a rapid return to normal of the neurological findings. The improvement in spinal fluid abnormalities did not parallel the above findings but the spinal fluid gradually returned to normal during the first hospital admission.

After a period of 10 weeks during which time the patient was completely asymptomatic, an apparent relapse developed as evidenced by his symptomatic, neurological, and spinal fluid findings. The patient was again treated intravenously with corticotropin and as before responded dramatically symptomatically and neurologically; however, the return toward normalcy of the spinal fluid was again delayed.

4. Roseman, E., and Aring, C. D.: Infectious Polyneuritis: Infectious Neuronitis, Acute Polyneuritis with Facial Diplegia, Guillain-Barré Syndrome, Landry's Paralysis, etc., Medicine **20**: 463-494, 1941.

5. Scheinker, I. M.: Pathology and Pathogenesis of Infectious Polyneuritis (Guillain-Barré Syndrome), J. Neuropath. & Exper. Neurol. **8**: 184-193, 1949.

6. Fox and O'Connor.[3b] Pullen and Sodeman.[3c] Haymaker, W., and Kernohan, J. W.: Landey-Guillain-Barré Syndrome: Clinicopathologic Report of 50 Fatal Cases and Critique of Literature, Medicine **28**: 59-141, 1949.

6a. Thorn, G. W., and others: Medical Progress: Clinical Usefulness of ACTH and Cortisone, New England J. Med. **242**: 783-793, 824-834, and 865-872, 1950.

7. Forster, F. M.; Brown, M., and Merritt, H. H.: Polyneuritis with Facial Diplegia: Clinical Study, New England J. Med. **225**: 51-56, 1941.

8. Brain.[3c] Roseman and Aring.[4]

GUILLAIN-BARRÉ SYNDROME TREATED WITH CORTICOTROPIN (ACTH)

REPORT OF A CASE

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William Locke, M.D.
and
Ralph Carabasi, M.D., New Orleans

Guillain-Barré syndrome, or infective neuronitis, is a neurological entity characterized by inflammation of multiple nerves with facial diplegia and albuminocytological dissociation of the cerebrospinal fluid. The pathogenesis is not well understood. Attempts to isolate a responsible micro-organism have proved unsuccessful.[1] In many instances the disease appears a few days after administration of a sulfonamide, after an infection of the upper respiratory tract, or after any of a wide variety of illnesses.[2] In 1950 Reitman and Rothschild[3] discussed an illuminating case in which the Guillain-Barré syndrome developed nine days after injection of tetanus antitoxin. Several similar cases had been previously reported.[4] The initial pathological response of the nervous system consists in pronounced swelling of the nerve fibers in the spinal roots, spinal cord tracts, and the cranial and peripheral nerves.[5]

Such observations suggested to us that the disease might be, in some instances at least, a manifestation of hypersensitivity of nervous tissue to an allergen and consequently that the course of the disease might be influenced favorably by an antiallergic agent. Since 1949 a large quantity of clinical and experimental information has been collected indicating that allergic lesions may resolve under the influence of adrenal cortical steroids in high concentration. These considerations led us to test the therapeutic effectiveness of corticotropin (ACTH) in the following case of Guillain-Barré syndrome.

REPORT OF A CASE

An English-Italian schoolboy, aged 15, was admitted to Foundation Hospital on Jan. 21, 1952, because of facial diplegia and quadriplegia. He had had a cold, and on Dec. 27, 1951, severe generalized headache developed. Three days later weakness of the left side of the face appeared, and the following day weakness of the right side of the face was noted. By Jan. 4, 1952, both legs were weak and he had difficulty walking; muscular soreness in the legs appeared at this time. On Jan. 8 the weakness extended to the back, neck, and arms, and the patient was confined to bed. He had difficulty in swallowing, coughing, and defecating. He had not noted anesthesia of the skin.

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1. Haymaker, W., and Kernohan, J. W.: Landry-Guillain-Barré Syndrome: Clinicopathologic Report of 50 Fatal Cases and Critique of Literature, Medicine **28**: 59-141 (Feb.) 1949.

2. Alpers, B. J.: Clinical Neurology, ed. 2, Philadelphia, F. A. Davis Company, 1949.

3. Reitman, N., and Rothschild, K.: Non-Infectious Nature of Guillain-Barré Syndrome with Possible Explanation for Albumino-Cytologic Dissociation, Ann. Int. Med. **32**: 923-934 (May) 1950.

4. Haymaker and Kernohan.[1] Kamman, G. R., and Weisberg, M.: Polyneuritis with Facial Diplegia (Neuronitis) Following Serum Sickness in Adult, Minnesota Med. **23**: 789-791 (Nov.) 1940. Morris, M. H.: Polyneuritis with Facial Diplegia Following Serum Sickness in Adult, M. Rec. **156**: 420-422 (July) 1943.

5. Scheinker, I. M.: Pathology and Pathogenesis of Infectious Polyneuritis (Guillain-Barré Syndrome), J. Neuropath. & Exper. Neurol. **8**: 184-193 (April) 1949.

When first examined, on Jan. 21, the patient lay paralyzed in bed. He was conscious and complained of pain in his legs. The oral temperature was 98.6 F, pulse rate 140 per minute, blood pressure 140 mm. Hg systolic and 100 mm. Hg diastolic, and respirations 16 per minute. Neurological examination disclosed total lower motor neuron facial diplegia on the left and partial on the right; questionable weakness of the soft palate; complete quadriplegia with loss of the deep tendon reflexes; loss of position sense in the fingers, and loss of touch, pain, and position sense in the toes and feet; and moderate tenderness of the peroneal nerves. The other results were normal. The initial laboratory studies revealed hemoglobin, 17.2 gm. per 100 cc. (photelometric method with sodium carbonate); hematocrit, 55%; erythrocyte count, 5,700,000 per cubic millimeter; leukocyte count, 27,000 per cubic millimeter (2% band forms, 89% segmented forms, 1% basophils, and 8% lymphocytes); sedimentation rate, 10 mm. per hour (Westergren); blood urea nitrogen, 20 mg. per 100 cc.; blood nonprotein nitrogen, 39 mg. per 100 cc.; fasting blood sugar, 105 mg. per 100 cc.; and total plasma protein, 7.1 gm. per 100 cc. Results of blood Kahn and Wassermann tests, urinalysis, and fecal examination were normal. A roentgenogram of the chest revealed no abnormalities. Examination of cerebrospinal fluid on the day after admission showed normal pressure, cells 0, protein 248 mg. per 100 cc., Pandy reaction moderate increase, sugar 91 mg. per 100 cc., chloride 122 mEq. per liter, gold curve 1111112211, and negative Wassermann reaction. The diagnosis of Guillain-Barré syndrome was made. Hydration was accomplished by intravenous administration of fluids. In addition, boards were placed under the mattress, penicillin was given prophylactically, and the pulse rate and temperature were recorded every 30 minutes.

On the second day after admission the patient's condition became critical. He had difficulty swallowing, and he strangled on saliva. Thoracic expansion was diminished, and he was barely able to cough. The pulse was rapid and the skin clammy. An emergency tracheotomy was performed, and a respirator was placed in his room. On the third day treatment with corticotropin,* in the form of lyophilized ACTH, was started, the daily dosage being 25 mg. administered intravenously over a period of eight hours. The same day tube feedings and passive exercises of the extremities were begun. On the fourth day the patient rested more comfortably and his pulse rate was slower. He could take more fluids, was able to move his toes a little, and could raise his knees slightly from the bed. By the fifth day he felt better. He could move his fingers and hands, cough more forcefully, and smile slightly on the right side. On the sixth day he was swallowing gelatin and custards and was able to cough up mucus. He could move his forearms and upper arms by this time. By the eighth day he could raise his head from the pillow, touch his ears with his fingers, and swallow more easily. There was more movement of the right side of his face and greater thoracic expansion. Administration of corticotropin was therefore discontinued.

On the 10th day the patient did not seem as alert as before and did not use his hands and arms as well. On the 17th day he was definitely worse; he could move the fingers and hands just slightly and could barely raise the right elbow from the bed. He was able to swallow only liquids. The left side of the face was totally paralyzed, and the right side was not improved. The trunk and lower extremities were completely paralyzed. Position and vibration senses were absent in both upper and lower extremities, and touch and discrimination in the feet were diminished. The ulnar and peroneal nerves were slightly tender. His condition remained stationary except for some increase in strength of the shoulder muscles. Owing to the relapse following discontinuance of corticotropin therapy and the lack of appreciable improvement, administration of corticotropin was again started on the 40th hospital day and continued for the next eight weeks. Eighty milligrams of corticotropin in gelatin was injected intramuscularly each day for 2 days; 40 mg. was then given daily for 10 days. Thereafter the dosage was gradually reduced until he was receiving 5 mg. every two days. Potassium supplements were given during this period of treatment.

Two days after the second course of corticotropin was begun, the patient could raise his right elbow from the bed and touch his nose with the fingers of the right hand. Thirteen days afterwards he was able to grasp an overhanging grip with the right hand and the left arm and hand were stronger. There was some contraction of the quadriceps femoris bilaterally. By the third week he was able to hold a book before him while lying in bed and he could raise his knees from the bed. Sensory improvement was noted in the hands but not in the feet. By the fourth week he was using a wheel chair by himself and was able to stand alone against a wall. He was using crutches by the sixth week.

During this second course of corticotropin ("acthar") therapy the daily urinary excretion of formaldehydogenic corticoids expressed as equivalents of desoxycorticosterone changed from a pretreatment level of 0.5 mg. to 1.99 mg. while he was receiving 40 mg. of corticotropin a day and 1.61 mg. when he was receiving 10 mg. of corticotropin a day. No significant changes were observed in the excretion of 17-ketosteroids.

During the last week he was under observation, the fourth week after final discontinuance of corticotropin therapy, slight weakness of the left side of the face, slight weakness of the fingers, a pronounced foot drop, and diminished position sense in the toes remained. Examination of the cerebrospinal fluid revealed cells 0, protein 40 mg. per 100 cc., sugar 59 mg. per 100 cc., and chloride 129 mEq. per liter.

COMMENT

The natural course of Guillain-Barré syndrome is sufficiently variable to make evaluation of therapy in a single case difficult; however, our observations in this case are consistent with the hypothesis that the course of the disease is influenced favorably by the action of corticotropin. While our patient was being treated, two other cases of patients with the syndrome treated with corticotropin were reported.[6] In each case the immediate clinical response to treatment was considered favorable. In one instance, the authors, Stillman and Ganong,[6b] were led by much the same reasoning as we to determine the effect of corticotropin in the Guillain-Barré syndrome.

SUMMARY

A case of Guillain-Barré syndrome is reported in which improvement followed administration of corticotropin (ACTH), relapse occurred on discontinuance of its administration, and improvement again followed administration of a second course of the hormone. The probable role of allergy in the production of this syndrome is considered.

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* All of the corticotropin for this study was supplied by Armour & Co., Chicago.

6. (*a*) Seltzer, H. S.; Lichty, D. E., and Conn, J. W.: Case of Guillain-Barré Syndrome (Infectious Polyneuronitis) with Apparent Response to ACTH, Univ. Michigan M. Bull. **18**: 27-31 (Jan.) 1952. (*b*) Stillman, J. S., and Ganong, W. F.: Guillain-Barré Syndrome: Report of Case Treated with ACTH and Cortisone, New England J. Med. **246**: 293-296 (Feb. 21) 1952.

Problem Drinkers.—Of the sixty-five million people in this country who drink alcoholic beverages, between four and five million are affected adversely in one way or another. By this, it is not meant that they are temporarily confused, elated, or depressed, but that their drinking precipitates a problem for them which is more than just a passing phase. Of these four to five million problem drinkers, the number of definite chronic alcoholics has been estimated at about one million and a quarter. Any condition that affects so many people and brings about so much destruction, both mental and physical, and apparently causes progressive deterioration of its victims if it is not arrested, must be considered by the medical profession as one of its pressing problems—one presenting a challenge that cannot be ignored. —Marvin A. Block, M.D., Alcoholism: The Physician's Duty, *GP*, September, 1952.

OBSTRUCTIVE JAUNDICE CAUSED BY DUODENAL ULCER

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Obstructive jaundice caused by duodenal ulcer is uncommon, and only 39 cases have been reported in the literature of the United States. A 40th case is presented here with a discussion of this disease entity.

REPORT OF A CASE

The patient, a 56-year-old white man, was employed as a packer. He entered the Bronx Veterans Administration Hospital on July 3, 1952. His chief complaint was of jaundice of one month's duration. The patient had been well until June 4, 1952. At that time, there was a sudden onset of severe, crampy, nonradiating, midepigastric pain of one-half hour's duration. This pain caused him to double up. Similar attacks of pain occurred on June 15 and June 23, 1952. On June 5, the day after the first attack, the patient noticed that icterus, associated with dark urine and clay-colored stools, had developed. For eight days prior to admission he had had slight pruritus and hiccups. During the month prior to admission he had lost 10 lb. (4.5 kg.). He gave a history of alcoholism but denied having received transfusions or injections, having been exposed to anyone with jaundice, or having had contact with any hepatotoxic drug. Ever since 1930, the patient had had crampy pains in the abdomen after eating a fatty meal.

The patient was a thin, poorly nourished, middle-aged white man with moderately icteric skin and scleras. He appeared neither acutely nor chronically ill. His pulse rate was 84 and regular, blood pressure 160/96 mm. Hg, and temperature 98.6 F. The abdomen was soft and nontender. The liver was palpable two fingerbreadths below the costal margin.

Laboratory examination showed 9,800 white blood cells with a normal differential count, 5,010,000 red blood cells per cubic millimeter, and 11.5 gm. of hemoglobin per 100 cc. The urine was positive for bile and for urobilinogen in a dilution of 1:40. Tests for urobilinogen in the stool gave a slightly positive reaction. The total protein was 6.6 gm., albumin 4.1 gm., globulin 2.5 gm., alkaline phosphatase 20.6 Shinowara units, total cholesterol 150 mg., cholesterol esters 54 mg., bilirubin 7.2 mg., direct van den Bergh 3.8 mg., and indirect van den Bergh 3.4 mg. per 100 cc. Cephalin flocculation was normal. The prothrombin time was 27.6 seconds with a control of 17.4 seconds. A flat plate of the abdomen showed no gallstones. A gastrointestinal series constantly showed a deformed duodenal bulb with an ulcer niche; no change was noted in the duodenal sweep.

In view of the history of attacks of severe cramp-like abdominal pain accompanied by clay-colored stools, dark urine, and pruritus and icterus associated with liver function tests indicative of obstructive jaundice, it was believed that the most accurate diagnosis was a stone in the common bile duct. With that diagnosis in mind, the patient was subjected to laparotomy. At operation on July 16, 1952, the liver was found to be bile tinged but otherwise normal. The gallbladder was fibrotic and shrunken. The common duct was enlarged, and its walls were thickened. There was considerable induration in the region of the head of the pancreas at the level of the midpart of the descending duodenum. After duodenotomy, an ulcer was found on the posteromedial wall of the duodenum. The ulcer was located 2 cm. proximal to the ampulla of Vater and 5 cm. distal to the pylorus. It measured 1 cm. in diameter and was in direct contact with the common duct between the head of the pancreas and the wall of the duodenum. When a probe was passed through the common duct it could be felt through the base of the ulcer where it met resistance. The ulcer had not penetrated the common duct, but inflammatory reaction and edema about the base of the ulcer had caused complete obstruction. The common duct was irrigated proximally and distally, and no evidence of sand, gravel, or stones was found. A cholecystectomy with T-tube drainage of the common duct was performed. A postoperative cholangiogram revealed no stones. After the operation, pyloric obstruction developed. A subtotal gastric resection was done on Aug. 5, 1952. The patient recovered with no further complications and was discharged from the hospital on Aug. 29, 1952.

COMMENT

Homans in 1853 was the first to describe obstructive jaundice caused by duodenal ulcer. Since that time, 38 similar cases have been reported. Parks and Fitz [1] published a collection of 35 case histories in 1939. Additional case histories were reported by Levine and Gordon,[2] Engel and Spann,[3] and Williams.[4] The rarity of this condition is best illustrated by the large series reported by various authors and quoted by Levine and Gordon.[2] In this series of 1,813 patients with a duodenal ulcer, none had jaundice. Bockus [5] mentions having observed obstructive jaundice only once as a complication of duodenal ulcer. Bernheim, however, is quoted by Engel and Spann [3] as stating that, in patients with a duodenal ulcer, the icterus index averages 9 units; this suggests that subclinical jaundice in ulcer patients may be commoner than heretofore realized.

The etiological factors responsible for the obstructive jaundice in duodenal ulcer have been suggested by Parks and Fitz.[1] They are adhesions or edema about the ulcer constricting the common duct and inspissated blood in the common duct causing obstruction. Of the 35 cases collected by these authors, all the patients were in the age group of 20 to 54, and the ratio of men to women was 4:1. The majority of patients complained of pain in the right upper quadrant of the abdomen. This complaint led to the frequent preoperative diagnosis of common duct stone. There were a few patients, however, in whom the jaundice was not accompanied by pain. The majority of ulcers were in the first portion of the duodenum, and jaundice was usually due to adhesions between the duodenum and the biliary tract or to extension of edema to the region of the ampulla of Vater.

The importance of considering duodenal ulcer in the etiology of obstructive jaundice is best exemplified in Williams' report.[4] The patient was a 55-year-old man who had had obstructive jaundice for five months. The jaundice was believed to have been caused by an inoperable carcinoma of the head of the pancreas. When severe gastrointestinal bleeding commenced in this patient, it was believed that the carcinoma had eroded a blood vessel. The patient was treated conservatively and died. The significant finding at autopsy was a bleeding duodenal ulcer surrounded by scar tissue that had obstructed the common duct.

SUMMARY

An uncommon case of duodenal ulcer complicated by obstructive jaundice is discussed briefly. The importance of considering this entity in the differential diagnosis of obstructive jaundice is emphasized.

130 W. Kingsbridge Rd. (63).

Dr. A. S. Jacobson assisted in the preparation of this paper.

From the Medical Service of the Veterans Administration Hospital, Bronx, N. Y.

1. Parks, H., and Fitz, R.: A Case of Duodenal Ulcer with Hemorrhage Complicated by Jaundice, Rev. Gastroenterol. **6**: 179, 1939.

2. Levine, S., and Gordon, G. B.: Complete Biliary Obstruction Complicating Dudenal Ulcer; Perforation of Ulcer Followed by Immediate Release of Obstruction, Am. J. Digest. Dis. **9**: 397, 1942.

3. Engel, G. C., and Spann, R. G.: Jaundice Caused by Perforation of a Duodenal Ulcer, J. A. M. A. **131**: 213 (May 18) 1946.

4. Williams, R. D.: Obstructive Jaundice as a Complication of Duodenal Ulcer: Case Report, Surgery **28**: 111, 1950.

5. Bockus, H. L., and others: Gastro-Enterology, Philadelphia, W. B. Saunders Company, 1946, vol. 3, p. 186.

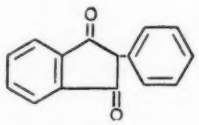
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Phenindione.—Hedulin (Walker).—$C_{15}H_{10}O_2$.—M.W. 222.23.—2-Phenyl-1,3-indandione.—The structural formula of phenindione may be represented as follows:



Actions and Uses.—Phenindione, a synthetic anticoagulant, is similar in action to bishydroxycoumarin and its derivatives but is chemically unrelated. It is effective orally for lowering of the blood concentration of thrombin in the management of conditions characterized or complicated by intravascular clotting. (See New and Nonofficial Remedies under the monographs on bishydroxycoumarin, cyclocumarol, and ethyl biscoumacetate.)

Phenindione acts more promptly than does bishydroxycoumarin and is effective in smaller doses. Therapeutic levels are usually obtained within 18 to 24 hours following the institution of therapy. Cumulative effects have not been observed and the prothrombin time of the blood usually returns to normal within 24 to 48 hours after the drug is discontinued. As an anticoagulant the agent is thus considered to be relatively safe. However, the predictability and controllability of its effect is not considered superior to other short-acting oral anticoagulants.

As with all systemic anticoagulants, the drug should not be given to patients with a hemorrhagic tendency, such as hemophilia, thrombocytopenic purpura, and leukemia with pronounced bleeding tendency, or to patients with open wounds or ulcerations, particularly of the gastrointestinal tract.

Dosage.—Phenindione is administered orally. The initial total daily dosage should be 0.2 to 0.3 gm., half given in the morning and half at bedtime. Patients weighing less than 70 kg. should be given 0.2 gm. daily; those weighing more than 70 kg. should receive 0.3 gm. daily. This usually does not result in excessive lowering of the blood prothrombin level, but subsequent dosage is subject to adjustment in accordance with prothrombin time determinations. Maintenance dosage should be adjusted to lengthen the prothrombin time from two to two and one-half of normal values. The maintenance dosage may vary from 0.05 to 0.1 gm. per day, given in the same manner as the initial dose. The average maintenance dose is approximately 75 mg. When this has been established by daily prothrombin determinations for the first three days, the tests for prothrombin time need be repeated only at 7 to 14 day intervals, or as may be indicated by the patient's response. If hemorrhage occurs the drug should be immediately withdrawn and, when necessary, 50 to 75 mg. of vitamin K should be administered intravenously with or without transfusions of fresh whole blood or plasma.

Tests and Standards.—

Physical Properties: Phenindione is a pale yellow, crystalline material, which is practically odorless, m.p. 148-151°. It is very slightly soluble in water. The amounts which dissolve in the following solvents to form 100 ml. of solution are: 1.0 gm. in alcohol and 0.9 gm. in ether.

Identity Tests: Place a few crystals of phenindione in a small test tube and add 1 ml. of sulfuric acid: the solution turns deep blue to violet. Dilute with 1 ml. of water: the solution becomes colorless and a white precipitate appears.

Dissolve about 1 gm. of phenindione in 50 ml. of alcohol in a 200 ml. round-bottomed flask. Add 0.5 ml. of aniline and reflux gently for 3 hours. Cool, filter, wash the red crystalline material with alcohol, and recrystallize from chloroform: the product melts at 222-228°.

A 0.0005% solution, prepared as described in the spectrophotometric assay for phenindione, exhibits ultraviolet absorption maxima at about 280 mμ [specific absorbancy, E(1%, 1 cm.), about 1328] and 330 mμ and minima at about 236 and 315 mμ. The ratio of absorbancies at 280 and 330 mμ is between 3.20 and 3.40.

Purity Tests: Ignite about 1 gm. of phenindione and add 0.5 ml. of hydrochloric acid to the residue. Evaporate to dryness on a steam bath, dissolve in 20 cc. of water, add 2 ml. of diluted acetic acid, bring to a volume of 25 cc., and run a *U.S.P.* heavy metals test: the amount of heavy metals does not exceed 20 ppm.

Dry about 1 gm. of phenindione, accurately weighed, at 105° for 4 hours: the loss in weight does not exceed 1.0%.

Char about 0.5 gm. of phenindione, accurately weighed, cool the residue, add 1 ml. of sulfuric acid, heat cautiously until evolution of sulfur trioxide ceases, ignite, cool, and weigh: the residue does not exceed 0.25%.

Assay: (Phenindione) Prepare a 0.0005% solution of phenindione as follows. Transfer to a 100 ml. volumetric flask 0.1 gm. of phenindione, accurately weighed, fill to the mark with 0.1 *N* sodium hydroxide, and mix. Transfer to a second 100 ml. flask 10 ml. of this solution, fill to the mark with 0.1 *N* sodium hydroxide, and mix. Transfer to a third 100 ml. volumetric flask 5 ml. of this last solution, fill to the mark with 0.1 *N* sodium hydroxide, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 280 mμ, using 0.1 *N* sodium hydroxide as a blank. The concentration of phenindione in the solution in mg./ml. = absorbancy ÷ 132.8. The amount of phenindione is not less than 95.0 nor more than 105.0%.

Dosage Forms of Phenindione

TABLETS. *Identity Tests:* Grind a number of tablets equivalent to about 1 gm. of phenindione, transfer to a 150 ml. beaker, add about 100 ml. of water containing 8 ml. of sodium hydroxide T.S., heat to boiling, cool to room temperature, and filter. Acidify the filtrate with hydrochloric acid and remove the precipitate by filtration. Wash the residue with cold water and dry at 105°. The residue responds to the identity tests for the active ingredient in the monograph for phenindione.

Assay: (Phenindione) Weigh 20 tablets and powder them. Transfer to a 100 ml. volumetric flask an amount of powder, accurately weighed, equivalent to about 0.1 gm. of phenindione, add 50 ml. of 0.1 *N* sodium hydroxide and shake the flask for about 10 min. Fill to the mark with 0.1 *N* sodium hydroxide and mix. Allow the undissolved material to settle. Transfer to a second 100 ml. volumetric flask 10 ml. of the supernatant solution, filled to the mark with 0.1 *N* sodium hydroxide, and mix. Transfer to a third 100 ml. volumetric flask 5 ml. of this solution, fill to the mark with 0.1 *N* sodium hydroxide, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 280 mμ, using 0.1 *N* sodium hydroxide as a blank. The concentration of phenindione in the solution in mg./ml. = absorbancy ÷ 132.8. The amount of phenindione is not less than 95.0 nor more than 105.0% of the labeled amount.

Walker Laboratories, Inc., Mount Vernon, N. Y.

Tablets Hedulin: 50 mg.

Vitamin B_{12}-U.S.P. (See New and Nonofficial Remedies 1952, p. 470).

Premo Pharmaceutical Laboratories, Inc., South Hackensack, N. J.

Solution Crystalline Vitamin B_{12}: 5 cc. vial. A saline solution containing 30 μg of vitamin B_{12} in each cubic centimeter. 10 cc. vial. A saline solution containing 50 μg of vitamin B_{12} in each cubic centimeter.

Tetanus Toxoid, Alum Precipitated-U.S.P. (See New and Nonofficial Remedies 1952, p. 386).

Sharp & Dohme, Inc., West Point, Pa.

Tetanus Toxoid (Purified, Alum Precipitated): 1 cc. vials (one 2 dose immunization) and 5 cc. vials (five 2 dose immunizations). Preserved with thimerosal 1:10,000.

Pyrilamine Maleate (See New and Nonofficial Remedies 1952, p. 12).

Wm. H. Rorer, Inc., Philadelphia.

Tablets Thylogen Maleate: 25 and 50 mg.

Polymyxin B Sulfate (See THE JOURNAL, Nov. 22, 1952, p. 1219).

Chas. Pfizer & Company, Inc., Brooklyn.

Soluble Tablets Polymyxin B Sulfate: 250,000 units of polymyxin B as the sulfate.

HOSPITAL SERVICE IN THE UNITED STATES

THIRTY-SECOND ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

By F. H. Arestad, M.D., and Mary A. McGovern

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The present report on hospital service in the United States is based on information received from individual hospitals registered by the American Medical Association. These institutions, numbering 6,665, reported a total of 18,914,847 admissions in 1952 as compared with 18,237,118 in the previous year. This represents an admission rate of one new patient every 1.6 seconds. The number of hospital births in the corresponding period was 3,170,495, or one live baby every 9.9 seconds, whereas the highest previous total was 2,999,371 in 1951. The bed capacity increased in the last year by 11,627 and is now recorded at 1,541,615. Similarly, the daily census, with a reported average of 1,309,377, represents an increase of 15,724 as compared with the previous year. This indicates further that in the 12 month period under consideration the hospitals registered by the American Medical Association gave a total of 479,231,982 days of patient care.

SUMMARY OF HOSPITAL DATA—1952

All Registered Hospitals		General Hospitals	
Number	6,665	Number	4,924
Bed capacity	1,541,615	Bed capacity	640,923
Bassinets	93,747	Bassinets	90,371
Patients admitted	18,914,847	Patients admitted	17,760,057
Births	3,170,495	Births	3,090,807
Average daily census	1,309,377	Average daily census	475,193
Patient days	479,231,982	Patient days	173,920,638

Included in the 1952 report are (1) statistical and other descriptive material on the number, size, and classification of hospitals, type of service offered, ownership or control, bed capacity, number of admissions, hospital births, average length of stay in general hospitals, bed occupancy rates, average daily census, and total patient days; (2) information on professional, practical, and other ancillary nursing personnel, schools of nursing education, and student enrollment; (3) data on special services, including x-ray, laboratory, and outpatient departments; (4) a survey of motion picture facilities in hospitals; (5) statistical data on technical personnel; (6) an analysis of the number and type of hospitals utilizing the Standard Nomenclature of Diseases and Operations; (7) information on general practice sections in hospitals; and (8) a general report on the technical schools approved by the Council on Medical Education and Hospitals in the fields of medical technology, x-ray technique, physical therapy, occupational therapy, and medical record library science.

The lists of hospitals and technical schools are not included in the present issue but have been revised and published in a separate supplement that will be distributed to all registered hospitals, medical schools, approved technical schools, secretaries of state medical associations, secretaries of county medical societies, editors of state medical journals, state boards of medical examiners, national and state hospital associations, state boards of nurse examiners, state health officers, medical departments of the federal government, allied technical associations, other agencies, and on request to individual physicians.

As in previous years, the list of registered hospitals will contain special symbols designating (1) the hospitals approved by the American Medical Association for intern and residency training, (2) hospitals maintaining

cancer clinics approved by the American College of Surgeons, (3) hospitals conducting schools of professional nursing education or affiliated training programs accredited by the respective state boards of nurse examiners, and (4) hospitals fully approved by the Joint Commission on the Accreditation of Hospitals sponsored by the American College of Physicians, the American College of Surgeons, the American Hospital Association, the American Medical Association, and the Canadian Medical Association.

TABLE A.—*Summary of Growth of Hospitals, 1909 to 1952*

	Federal Hospitals		State Hospitals		All Other Hospitals		Total	
Year	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
1909	71	8,827	232	189,049	4,056	223,189	4,359	421,065
1914	93	12,602	294	232,834	4,650	287,045	5,047	532,481
1918	110	18,815	303	262,254	4,910	331,182	5,323	612,251
1923	220	53,869	601	302,208	6,009	399,645	6,830	755,722
1928	294	61,765	595	369,759	5,963	461,410	6,852	892,934
1931	291	69,170	576	419,282	5,746	485,663	6,613	974,115
1932	301	74,151	568	442,601	5,693	497,602	6,562	1,014,354
1933	295	75,635	557	459,646	5,585	491,765	6,437	1,027,046
1934	313	77,865	544	473,035	5,477	497,201	6,334	1,048,101
1935	316	83,353	526	483,994	5,404	507,792	6,246	1,075,139
1936	323	84,234	524	503,306	5,342	509,181	6,189	1,096,721
1937	329	97,951	522	508,913	5,277	517,684	6,128	1,124,548
1938	330	92,248	523	541,279	5,313	527,853	6,166	1,161,380
1939	329	96,338	523	560,575	5,374	538,113	6,226	1,195,026
1940	336	108,928	521	572,079	5,434	545,238	6,291	1,226,245
1941	428	179,202	530	600,320	5,400	544,859	6,358	1,324,381
1942	474	220,938	530	606,437	5,341	556,452	6,345	1,383,827
1943	827	476,673	531	610,115	5,297	562,466	6,655	1,649,254
1944	798	551,135	539	609,025	5,274	569,785	6,611	1,729,945
1945	705	546,384	549	619,642	5,257	572,918	6,511	1,738,944
1946	464	264,486	557	628,363	5,259	575,865	6,280	1,468,714
1947	401	213,204	563	626,648	5,312	585,370	6,276	1,425,222
1948	372	185,098	567	648,386	5,396	590,036	6,335	1,423,520
1949	361	182,254	573	656,611	5,638	600,165	6,572	1,439,030
1950	355	186,793	552	665,019	5,523	605,100	6,430	1,456,912
1951	388	216,939	554	683,376	5,695	629,673	6,637	1,529,988
1952	386	211,510	549	691,408	5,730	638,697	6,665	1,541,615

TABLE B 1.—*Hospitals Classified by Size and Type of Service*

Bed Capacity	General Hospitals	Nervous and Mental	Tuberculosis	Other Hospitals	Total Number
25 and under	988	29	16	150	1,183
26-50	1,230	80	50	206	1,575
51-100	1,013	76	107	199	1,395
101-200	874	48	105	99	1,126
201-300	386	26	55	36	503
301 and over	433	326	86	38	883
Totals	4,924	585	428	728	6,665

The Council wishes to express its appreciation to the administration and staffs of all hospitals and technical schools, the medical departments of the federal services, and all others whose generous cooperation has made possible the preparation of this report.

Scope of Survey

All hospitals registered by the American Medical Association are represented in the present annual survey. These include 6,665 in the United States, 26 in Alaska, 6 in the Canal Zone, 2 in Guam, 35 in Hawaii, 47 in Puerto Rico, and 4 in the Virgin Islands. All of these appear in the supplemental list of registered hospitals, but the statistical report as here represented is limited solely to hospitals located within the Continental United States. Shown in this list are 2,610 hospitals approved by the Joint Commission on the Accreditation of Hospitals, 624 hospitals operating cancer clinics approved by the American College of Surgeons, 1,079 hospitals with accredited schools of professional nursing, 248 hospitals offering acceptable affiliated programs in nursing education, and 1,341 hospitals approved by the American Medical Association for the training of interns and/or resident physicians. Represented in the latter group are 871 hospitals approved for internships and 1,153 approved for residency training; however, a more detailed report on these educational services will appear in the Internship and Residency Number of THE JOURNAL, Sept. 26, 1953. Included in the present survey are also 538 schools of medical technology approved by the Council on Medical Education and Hospitals, 326 schools for x-ray technicians, 37 schools of physical therapy, 27 schools of occupational therapy, and 23 schools for medical record librarians.

TABLE B 2.—*Hospitals Classified by Size and Control*

	Governmental				Nongovernmental			
Bed Capacity	Federal	State	City and County	Total	Church and Other Nonprofit Hospitals	Proprietary Hospitals	Total	Total All Hospitals
25 and under	18	21	160	199	378	606	984	1,183
26-50	55	43	317	415	718	442	1,160	1,575
51-100	20	60	284	364	848	183	1,031	1,395
101-200	54	58	165	277	785	64	849	1,126
201-300	46	37	81	164	331	8	339	503
301 and over	193	330	136	659	222	2	224	883
Totals	386	549	1,143	2,078	3,282	1,305	4,587	6,665

Changes, corrections, and additions have been made in the registered list up to date of publication and, therefore, totals derived from the list itself may show slight variations from those presented in the tables of the statistical report.

TABLE C.—*Summary of Hospital Service Classified by Control*

	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
Governmental						
Federal	386	211,510	3,246	1,494,366	170,745	117,432
State	549	691,408	1,974	711,512	656,232	68,763
County	688	111,663	6,891	1,212,824	98,434	196,826
City	374	72,493	6,043	1,254,365	57,964	203,370
City-county	81	12,540	1,453	297,654	9,687	52,972
Total governmental	2,078	1,099,623	19,607	4,970,721	984,062	634,363
Nongovernmental						
Church	1,136	158,389	28,821	5,389,869	119,782	1,034,263
Nonprofit associations	2,146	232,598	37,193	7,024,248	171,527	1,259,017
Total nonprofit	3,282	390,987	66,014	12,414,117	291,309	2,293,280
Individual and partnership	903	26,183	4,920	796,422	15,964	129,838
Corporations (profit unrestricted)	402	24,822	3,206	733,587	18,042	113,014
Total proprietary	1,305	51,005	8,126	1,530,009	34,006	242,852
Total nongovernmental	4,587	441,992	74,140	13,944,126	325,315	2,536,132
Total all hospitals	6,665	1,541,615	93,747	18,914,847	1,309,377	3,170,495

The report of 1951, published in THE JOURNAL, May 10, 1952, was based on reports from 6,637 hospitals. Since that time 291 hospitals have been added to the registered list, whereas 103 have been closed or deleted for other reasons. In the current survey 160 hospitals failed to supply the necessary information and are not included in the present report. These institutions listed 18,333 beds in 1951, 200,915 admissions, and an average daily census of 14,439.

Number, Size, and Classification of Hospitals

Perhaps the earliest record of hospitals in the United States is the list prepared under the auspices of the U. S. Bureau of Education and published in the Transactions of the American Medical Association in 1873. This list contained the names of 178 hospitals that in the previous year reported 35,604 beds and 146,472 admissions. Apparently no further lists were prepared until the publication in 1903 of the Standard Medical Directory. The following year the American Medical Association took over the records of the Standard Directory and compiled a list of 2,608 hospitals, which was published in the first edition of the American Medical Directory in 1906. The subsequent listing of 4,359 hospitals in 1909 is generally regarded as the first complete list of hospital services in the United States. By 1928 the number of hospitals published by the American Medical Association had increased to 6,852, but thereafter the number began to decrease as specific standards adopted by the House of Delegates were applied to the registration and listing of hospital services. The number of registered hospitals continued to decline, until 6,128 were recorded in 1937, but by 1951 the total had again increased to 6,637.

TABLE D.—*Summary of Hospital Data According to Type of Service*

	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
General	4,924	640,923	90,371	17,760,057	475,193	3,090,807
N & M	585	732,929	178	312,252	704,056	460
Tuberculosis	428	89,571	119	109,925	75,253	3,570
Maternity	83	4,417	2,726	96,987	2,687	72,265
Industrial	31	2,936	1	61,642	1,966	7
E. E. N. T.	51	2,491	...	114,444	1,419	...
Children's	45	5,122	74	143,623	3,470	2
Orthopedic	87	7,209	31	39,883	5,277	126
Isolation	31	4,646	24	41,560	1,904	23
Conv. and rest.	128	6,966	3	37,733	5,106	34
Institutions	180	20,570	71	134,194	13,750	143
All other hospitals	92	23,835	149	62,547	19,296	3,058
Total all hospitals	6,665	1,541,615	93,747	18,914,847	1,309,377	3,170,495

The number of hospitals currently registered by the American Medical Association is 6,665. Of this total, 2,078, or 31.1%, operate under governmental control, whereas 4,587, or 68.8%, are in the nongovernmental group. Included in the governmental division are 386 federal hospitals, 549 state institutions, 688 county hospitals, 374 municipal, and 81 city-county. Further, it may be observed in table E that 56% of the governmental hospitals are general in type, while 17% operate as psychiatric institutions, 16% as tuberculosis hospitals, and 11% under other service classifications. The general hospitals predominate in all of the governmental sections except the state group, where 51% of the hospitals are devoted to psychiatric care and only 10% to general hospitalization.

The nongovernmental group includes 1,136 church hospitals, 2,146 other nonprofit associations, 402 corporations unrestricted as to profit, and 903 operating on an individual or partnership basis. Reference to table E will show that 82% of the nongovernmental hospitals are organized for general care, 5% for psychiatric hospitalization, 2% for tuberculosis, and 11% for other services. It is apparent, therefore, that the governmental and nongovernmental groups differ widely in their service classifications.

The general hospitals, totaling 4,924, represent 73.8% of all hospitals registered by the American Medical Association. Next in size is the psychiatric division,

TABLE E.—*Governmental and Nongovernmental Hospital Service*

	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
Governmental						
General	1,173	264,921	18,805	4,441,742	199,953	620,982
N & M	358	713,056	174	229,783	688,119	425
Tuberculosis	327	79,838	118	95,789	67,487	3,569
Other special	78	23,663	446	90,285	16,199	9,350
Institutions	142	18,145	64	113,122	12,304	37
Total governmental	2,078	1,099,623	19,607	4,970,721	984,062	634,363
Nongovernmental						
General	3,751	376,002	71,566	13,318,315	275,240	2,469,825
N & M	227	19,873	4	82,469	15,937	35
Tuberculosis	101	9,733	1	14,136	7,766	1
Other special	470	33,959	2,562	508,134	24,926	66,165
Institutions	38	2,425	7	21,072	1,446	106
Total nongovernmental	4,587	441,992	74,140	13,944,126	325,315	2,536,132
Total all hospitals	6,665	1,541,615	93,747	18,914,847	1,309,377	3,170,495

which lists only 585 institutions yet has a greater bed capacity than is found in any other group. The tuberculosis sanatoriums total 428, whereas the remaining groups shown in table D vary in number from 31 to 180.

The classification of hospitals by size is illustrated in tables B 1 and B 2. Here the variations in bed capacity

TABLE F.—*Summary of Federal Hospital Service in the United States According to Type of Service and Governmental Agencies Concerned*

Type	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
U. S. Army						
General	57	38,734	1,275	433,925	29,610	44,473
U. S. Air Force						
General	32	9,125	566	165,352	6,167	23,149
U. S. Navy						
General	35	24,764	917	276,052	19,086	39,649
U. S. Public Health Service						
General	14	4,511	36	57,192	3,649	1,174
N & M	2	2,400	...	4,748	2,038	.....
TB	2	592	...	670	494	.....
Other special	2	800	6	9,614	568	6
Institutions	17	952	7	11,532	353	18
Totals	37	9,255	49	83,756	7,102	1,198
Veterans Administration						
General	102	52,891	...	413,212	40,190	.....
N & M	36	54,895	...	39,064	50,614	.....
TB	21	9,775	...	18,908	7,466	.....
Totals	159	117,561	...	471,184	98,270	.....
Indian Affairs						
General	49	2,222	370	43,728	1,350	6,070
TB	5	805	...	2,532	697	5
Institutions	3	110	...	2,581	19	.....
Totals	57	3,137	370	48,841	2,066	6,075
Other Federal						
General	3	551	66	10,076	471	2,882
N & M	1	6,920	3	1,438	6,915	6
Institutions	5	1,463	...	3,742	1,058	.....
Totals	9	8,934	69	15,256	8,444	2,888
Total all Federal Hospitals	386	211,510	3,246	1,494,366	170,745	117,432

are shown in relation both to hospital control and to type of service offered. Considering all registered hospitals as a group, it is found that 62.3% report 100 beds or less, 24.4% have 101 to 300 beds, and 13.2% have 301 beds or more. The general hospitals follow practi-

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: A. GOVERNMENT HOSPITALS

Marginal No.		Federal					State					County					City					City-County					Total Governmental					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	7	4,538	63	36,634	4,090	9	8,823	105	31,340	8,435	9	514	49	12,830	442	3	306	55	14,066	193	6	741	135	31,238	517	34	14,922	407	126,108	13,677	1
2	Arizona	16	2,038	110	21,415	1,491	2	1,730	...	974	1,689	7	821	82	14,788	691	2	28	8	1,136	12	..	.....	...	.....	....	27	4,617	200	38,313	3,883	2
3	Arkansas	6	4,276	29	27,722	3,843	4	6,539	38	11,265	6,325	12	607	151	14,062	235	6	337	83	16,387	212	..	.....	...	.....	....	28	11,759	301	69,436	10,615	3
4	California	31	22,327	427	195,095	18,413	18	43,013	31	35,622	42,593	58	21,291	896	230,117	17,865	3	111	36	4,547	64	3	2,365	51	22,242	2,368	113	89,107	1,441	487,623	81,300	4
5	Colorado	7	5,026	73	26,215	4,331	8	6,878	20	9,234	6,556	9	454	109	13,515	220	1	97	15	2,869	55	1	452	30	7,340	341	26	12,907	247	59,173	11,503	5
6	Connecticut	3	407	...	4,094	305	14	14,290	5	8,512	13,164	..	.....	...	.....	.....	3	495	14	4,312	260	..	.....	...	.....	....	20	15,192	19	16,918	13,729	6
7	Delaware	1	300	...	2,337	241	6	2,912	7	1,537	2,862	..	.....	...	.....	.....	..	.....	...	.....	.....	..	.....	...	.....	....	7	3,212	7	3,874	3,103	7
8	District of Columbia	7	10,041	107	35,217	9,562	..	.....	...	.....	.....	..	.....	...	.....	.....	4	3,188	129	19,799	2,621	..	.....	...	.....	....	11	13,229	236	55,016	12,183	8
9	Florida	11	3,410	163	49,779	2,688	9	10,123	20	7,088	9,199	18	1,976	309	55,953	1,265	11	1,156	229	44,891	828	3	167	31	4,886	111	52	16,832	752	162,597	14,091	9
10	Georgia	10	5,499	79	52,462	4,198	5	13,133	7	5,867	12,849	20	1,551	329	52,907	948	5	909	135	39,540	689	15	1,162	246	49,221	685	55	22,254	796	199,997	19,369	10
11	Idaho	1	250	...	2,012	192	5	2,166	1	1,715	2,011	12	499	155	15,650	231	2	39	11	1,131	18	1	30	12	850	16	21	2,984	179	21,358	2,468	11
12	Illinois	9	9,919	85	60,867	8,519	21	50,273	47	31,437	47,288	29	8,096	216	79,848	5,615	20	3,069	234	41,716	2,320	..	.....	...	.....	....	79	71,387	582	213,868	63,742	12
13	Indiana	6	3,875	24	16,217	3,235	17	16,090	71	19,137	14,526	44	3,240	575	88,280	2,683	4	789	97	15,455	614	..	.....	...	.....	....	71	23,994	767	139,089	21,058	13
14	Iowa	3	2,414	...	4,980	1,888	12	11,444	56	23,254	10,518	11	707	70	12,357	484	10	386	117	15,509	258	..	.....	...	.....	....	36	14,951	243	56,100	13,148	14
15	Kansas	7	3,669	45	29,191	2,844	12	8,317	41	16,626	7,756	15	571	125	15,702	396	13	584	158	21,067	394	3	76	20	2,306	44	50	13,217	389	84,892	11,434	15
16	Kentucky	9	6,710	74	43,929	5,641	11	9,036	27	4,251	8,512	9	538	120	11,438	327	3	217	56	11,583	172	4	936	93	20,978	788	36	17,487	370	92,179	15,440	16
17	Louisiana	8	3,031	63	28,306	2,252	12	13,654	410	100,342	11,829	1	49	...	37	39	1	35	6	2,370	27	..	.....	...	.....	....	22	16,769	479	131,055	14,147	17
18	Maine	1	869	...	2,390	757	6	4,945	2	1,284	4,545	..	.....	...	.....	.....	3	230	40	3,979	191	..	.....	...	.....	....	10	6,044	42	7,653	5,493	18
19	Maryland	10	6,346	125	65,303	5,204	13	11,794	84	16,390	11,368	3	302	80	10,861	189	1	1,025	80	7,278	1,215	1	220	50	7,862	183	28	19,687	419	107,694	18,159	19
20	Massachusetts	11	7,907	113	39,664	7,110	28	35,129	51	16,759	33,020	7	1,287	...	1,087	993	27	6,725	558	97,150	5,037	..	.....	...	.....	....	73	51,048	722	154,660	46,160	20
21	Michigan	8	5,216	20	20,729	4,343	20	27,277	43	29,098	25,474	32	10,908	112	34,491	9,861	37	4,959	679	138,227	4,439	..	.....	...	.....	....	97	48,360	854	222,548	44,117	21
22	Minnesota	6	2,537	19	11,747	2,261	17	17,006	42	19,073	15,501	14	1,539	62	10,154	1,202	32	1,718	354	43,853	1,022	5	1,024	87	13,389	741	74	23,824	561	98,216	20,730	22
23	Mississippi	5	2,283	26	17,125	1,992	7	6,469	51	13,524	5,907	20	1,046	260	23,726	340	5	160	45	6,465	84	5	340	80	12,392	204	42	10,298	408	73,232	8,527	23
24	Missouri	6	3,761	20	25,376	2,400	15	16,591	13	10,461	15,667	9	667	124	15,846	389	16	5,459	319	58,944	4,537	..	.....	...	.....	....	46	26,478	476	110,627	22,993	24
25	Montana	6	511	26	6,577	287	2	2,202	...	1,317	2,149	5	281	23	1,698	157	..	.....	...	.....	.....	..	.....	...	.....	....	13	2,991	49	9,592	2,593	25
26	Nebraska	5	973	19	11,578	655	9	7,284	15	7,230	6,910	6	479	47	14,069	285	6	139	33	3,154	75	..	.....	...	.....	....	26	8,875	114	36,031	7,925	26
27	Nevada	4	221	20	3,939	163	1	425	...	180	392	6	561	73	13,264	417	..	.....	...	.....	.....	..	.....	...	.....	....	11	1,207	93	17,383	972	27
28	New Hampshire	2	272	16	5,502	224	3	3,606	...	1,171	3,411	3	164	24	2,195	79	3	209	21	3,674	69	..	.....	...	.....	....	11	4,251	61	12,542	3,783	28
29	New Jersey	6	3,983	87	21,069	2,904	13	18,674	5	8,027	17,878	21	10,523	387	18,204	9,000	7	3,139	60	40,768	2,288	..	.....	...	.....	....	47	36,319	539	88,068	32,070	29
30	New Mexico	11	1,405	59	13,898	1,074	5	1,595	11	2,887	1,511	4	208	58	6,265	71	3	158	35	6,272	102	1	85	22	2,986	35	24	3,451	185	32,308	2,793	30
31	New York	19	17,479	98	79,938	13,119	52	117,323	99	39,626	113,354	30	6,156	186	47,925	4,723	47	24,250	851	305,947	21,354	1	29	11	663	11	149	165,237	1,245	473,199	152,561	31
32	North Carolina	6	5,817	114	37,097	3,263	12	10,497	46	7,268	9,119	33	2,420	348	55,896	1,510	4	652	129	19,410	411	3	252	53	6,321	153	58	19,638	690	125,992	14,456	32
33	North Dakota	5	447	21	4,686	239	3	3,753	14	897	3,585	..	.....	...	.....	.....	2	27	9	497	12	..	.....	...	.....	....	10	4,227	44	6,080	3,836	33
34	Ohio	7	5,345	22	26,373	4,560	29	36,314	56	28,348	33,694	32	5,214	250	40,622	4,294	15	2,987	380	69,291	2,179	3	156	49	6,957	107	86	50,016	757	171,591	44,834	34
35	Oklahoma	13	1,911	119	31,790	1,428	13	12,111	64	17,813	10,736	6	394	96	11,095	181	15	603	167	22,738	315	..	.....	...	.....	....	47	15,019	446	83,436	12,660	35
36	Oregon	3	1,260	6	5,269	1,060	6	5,322	36	10,837	5,180	7	306	71	9,407	174	2	111	14	1,345	26	..	.....	...	.....	....	18	6,999	127	26,858	6,440	36
37	Pennsylvania	13	9,190	63	40,512	7,349	38	51,592	192	51,246	49,225	11	3,505	...	2,849	2,909	6	3,528	85	23,068	2,607	..	.....	...	.....	....	68	67,815	340	117,675	62,090	37
38	Rhode Island	3	1,158	48	14,769	907	4	5,879	9	2,597	5,425	..	.....	...	.....	.....	1	253	...	3,309	121	..	.....	...	.....	....	8	7,290	57	20,675	6,453	38
39	South Carolina	4	1,932	58	31,778	1,884	3	7,285	2	2,554	7,136	20	2,040	349	62,848	1,424	2	274	42	12,678	199	2	362	36	14,249	308	31	11,893	487	124,107	10,951	39
40	South Dakota	10	1,554	42	8,725	1,255	4	2,788	...	903	2,602	2	52	17	1,577	26	4	131	31	4,613	88	..	.....	...	.....	....	20	4,525	90	15,818	3,971	40
41	Tennessee	7	4,538	26	33,203	4,168	12	8,856	14	6,785	8,559	13	2,500	117	21,192	2,154	6	1,213	225	38,527	962	6	1,175	134	28,479	912	44	18,282	516	128,186	16,785	41
42	Texas	24	14,235	281	119,969	11,191	20	17,874	32	32,753	18,847	62	2,414	564	87,324	1,310	15	900	179	36,122	614	15	2,590	257	57,969	1,938	136	38,013	1,313	334,137	33,900	42
43	Utah	2	740	...	3,137	242	3	2,183	...	628	2,065	5	350	60	7,294	206	3	67	40	2,852	36	..	.....	...	.....	....	13	3,340	100	13,911	2,549	43
44	Vermont	1	250	...	2,820	173	5	1,692	...	754	1,866	..	.....	...	.....	.....	..	.....	...	.....	.....	..	.....	...	.....	....	6	1,912	...	3,574	2,039	44
45	Virginia	14	9,539	261	90,976	7,532	14	14,923	159	43,840	14,559	1	25	10	351	11	4	575	42	7,357	482	1	41	12	1,875	23	34	25,103	484	144,399	22,607	45
46	Washington	16	5,671	130	47,267	4,385	6	8,864	8	5,284	8,763	24	3,364	151	32,590	2,766	..	.....	...	.....	.....	1	240	18	4,013	144	47	18,139	307	89,154	16,058	46
47	West Virginia	5	1,631	7	9,190	1,102	9	5,350	10	4,425	4,832	3	111	18	2,391	76	3	366	60	15,968	321	..	.....	...	.....	....	20	7,458	95	31,974	6,331	47
48	Wisconsin	7	3,374	37	13,987	2,654	9	6,188	30	19,075	5,753	48	13,222	84	32,688	12,717	13	876	179	24,861	435	1	56	20	1,438	28	78	23,716	350	92,049	21,587	48
49	Wyoming	4	1,395	21	11,511	1,124	3	1,196	...	277	1,090	7	711	134	27,428	529	1	13	3	540	6	..	.....	...	.....	....	15	3,315	158	39,756	2,749	49
	Totals (1952)	386	211,510	3,246	1,494,366	170,745	549	691,408	1,974	711,512	656,232	688	111,663	6,891	1,212,824	89,434	374	72,493	6,043	1,254,365	57,964	81	12,549	1,453	297,654	9,687	2,078	1,099,623	19,607	4,970,721	984,062	
	(1951)	388	216,939	2,907	1,489,581	167,792	554	683,376	2,043	767,599	645,672	633	107,458	5,981	1,066,562	88,931	377	77,736	6,027	1,257,575	61,123	80	12,211	1,464	285,098	9,554	2,032	1,097,720	18,422	4,866,415	973,072	
	(1950)	355	186,793	2,419	1,127,937	145,397	552	665,019	2,034	791,863	632,283	572	103,826	5,186	970,463	86,825	363	69,731	5,675	1,181,415	57,809	70	11,672	1,299	245,692	9,147	1,912	1,037,041	16,613	4,317,370	931,461	
	(1949)	361	182,254	2,432	1,164,096	144,950	573	656,611	2,105	791,671	618,614	561	103,209	4,801	898,955	85,650	373	71,779	5,877	1,190,285	58,160	69	11,302	1,170	213,778	8,469	1,937	1,025,155	16,385	4,258,785	915,843	
	(1948)	372	185,098	2,343	1,185,874	147,159	567	648,386	2,056	817,630	611,410	530	101,327	4,397	851,655	82,460	368	73,797	5,867	1,222,070	58,075	63	11,159	1,091	213,262	8,465	1,900	1,019,767	15,757	4,290,491	907,569	
	(1947)	401	213,204	2,444	1,285,126	168,133	563	626,648	1,932	737,402	585,747	526	101,402	4,352	784,499	82,568	369	78,184	5,968	1,208,546	60,498	58	10,767	1,028	188,771	7,657	1,917	1,030,205	15,724	4,204,344	904,603	
	(1946)	464	264,486	2,692	1,949,711	213,246	557	628,363	1,876	648,538	579,782	514	102,071	4,315	704,772	79,758	363	76,534	5,836	1,109,573	57,283	64	11,280	1,009	185,569	7,863	1,962	1,082,734	15,728	4,598,163	937,932	
	(1945)	705	546,384	3,923	4,047,949	391,935	549	619,642	1,746	559,352	580,783	508	102,121	4,291	614,468	77,510	359	77,365	5,657	1,014,874	56,418	62	11,206	966	162,470	7,768	2,183	1,356,718	16,586	6,399,113	1,114,414	
	(1944)	798	551,135	3,462	4,287,271	303,875	539	609,025	1,690	556,224	570,441	504	102,544	3,889	571,581	77,856	365	79,687	5,491	996,423	57,417	56	9,887	757	133,721	6,594	2,262	1,352,278	15,289	6,545,220	1,016,183	
	(1943)	827	476,673	2,396	4,032,607	268,746	531	610,115	1,623	543,258	571,576	511	100,151	3,763	581,706	77,789	354	77,879	5,215	942,628	57,848	61	11,321	842	162,628	7,773	2,284	1,276,139	13,839	6,262,827	983,732	
	(1942)	474	220,938	1,206	1,675,722	147,094	530	606,437	1,618	601,481	566,457	505	98,997	3,512	606,390	76,948	354	79,252	4,847	999,687	60,982	61	10,157	645	126,395	7,157	1,924	1,015,781	11,828	4,009,675	858,638	
	(1941)	428	179,202	1,006	1,268,112	118,890	530	600,320	1,572	620,231	561,620	512	98,227	3,288	643,740	83,214	337	78,060	5,045	999,559	61,019	57	9,702	583	130,360	7,149	1,864	965,511	11,494	3,662,602	831,892	
	(1940)	336	108,928	1,089	557,137	86,604	521	572,079	1,347	588,274	539,994	514	102,340	3,097	615,247	87,029	332	79,045	4,390	986,859	63,644	64	11,297	636	126,487	7,401	1,767	873,689	10,559	2,869,004	784,672	
	(1939)	329	96,338	823	477,417	80,692	523	560,576	1,234	588,997	527,900	501	100,976	2,748	589,280	86,177	320	77,231	4,210	951,295	61,766	67	10,026	589	127,386	7,513	1,740	845,146	9,604	2,734,375	764,048	
	(1938)	330	92,248	772	445,891	75,470	523	541,279	1,127	549,637	512,839	490	96,621	2,581	552,066	80,262	317	75,180	4,089	928,924	61,006	68	9,808	542	130,762	7,110	1,728	815,136	9,111	2,607,280	736,687	
	(1937)	329	97,951	734	439,480	80,819	522	508,913	1,111	511,809	485,891	484	93,379	2,611	549,332	80,575	324	79,368	3,937	897,685	64,928	63	9,138	499	111,619	6,667	1,722	788,749	9,277	2,509,925	718,880	
	(1936)	323	84,234	675	426,570	68,752	524	503,306	1,136	534,652	478,778	484	87,541	2,388	497,706	76,277	332	78,950	3,947	885,058	65,508	61	9,809	496	108,373	7,520	1,724	763,840	8,642	2,452,859	696,835	
	(1935)	316	83,353	604	382,980	64,795	526	483,994	1,186	513,345	462,070	490	90,904	2,375	476,275	79,280	328	73,322	3,742	809,054	60,751	64	10,139	510	111,398	8,025	1,724	741,712	8,417	2,293,052	674,921	
	(1934)	313	77,865	560	324,354	58,209	544	473,035	1,154	474,539	447,014	496	83,919	2,404	453,425	71,157	328	71,931	3,680	792,887	59,891	68	11,138	548	113,860	8,729	1,749	717,888	8,346	2,159,066	645,000	

cally the same pattern, but in the fields of psychiatry and tuberculosis the larger types of institutions predominate. Only 34% of the general hospitals have more than 100 beds, whereas the corresponding ratios in the psychiatric and tuberculosis institutions are 68 and 57% respectively. When classified by control the following distribution is noted: (1) governmental hospitals of 100 beds or less, 978; 101 to 300 beds, 441; 301 beds or more, 659; (2) nongovernmental hospitals with 100 beds or less 3,175; 101 to 300 beds, 1,188; 301 beds or over, 224. Further information on individual groups classified by control with be found in table B 2.

Bed Capacity

Comparative Totals

1951: 1,529,988

1952: 1,541,615

As mentioned previously in this report, the hospitals in the list published in 1873 had a total of 35,604 beds. By 1909 this number had increased to 421,065, and in 1932 it exceeded for the first time the one million mark. The highest total occurred in 1945, when 1,738,944 beds were reported. In the next three years the bed capacity of the registered hospitals declined to 1,423,520, inci-

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL:
B. NONPROFIT ORGANIZATIONS

Marginal No.		Church Related (Nonprofit)					Nonprofit Associations					Total Nonprofit					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	11	1,456	262	50,155	1,017	18	1,858	271	55,651	1,305	29	3,314	533	105,806	2,322	1
2	Arizona	5	827	158	35,961	657	21	1,217	175	36,181	757	26	2,044	333	72,142	1,414	2
3	Arkansas	10	1,169	228	49,610	920	12	914	106	26,626	487	22	2,083	334	76,236	1,407	3
4	California	52	7,628	1,632	324,458	6,231	113	11,535	1,737	408,198	8,641	165	19,163	3,369	732,656	14,872	4
5	Colorado	34	5,497	627	123,605	2,586	28	2,111	195	40,203	1,386	62	5,608	822	163,808	3,972	5
6	Connecticut	7	1,911	298	64,514	1,543	36	6,406	999	188,610	4,726	43	8,317	1,297	253,124	6,269	6
7	Delaware	1	115	30	3,432	70	8	1,209	207	37,628	824	9	1,324	237	41,060	894	7
8	District of Columbia	5	1,218	227	49,010	921	10	1,798	327	55,909	1,347	15	3,016	554	104,919	2,268	8
9	Florida	13	1,940	356	62,698	1,259	42	3,007	493	82,765	1,758	55	4,947	849	145,463	3,017	9
10	Georgia	7	1,089	171	36,250	704	27	2,327	366	83,664	1,627	34	3,416	537	119,914	2,331	10
11	Idaho	12	991	261	36,741	617	9	312	83	9,906	182	21	1,303	344	46,647	799	11
12	Illinois	90	14,655	2,498	470,579	11,371	119	14,131	2,198	426,928	10,517	209	28,786	4,696	897,507	21,888	12
13	Indiana	30	5,434	1,069	208,512	4,310	23	1,871	369	71,384	1,443	53	7,305	1,438	279,896	5,753	13
14	Iowa	43	5,974	927	182,155	4,288	25	1,622	325	51,141	1,034	68	7,596	1,252	233,296	5,322	14
15	Kansas	46	4,339	827	147,812	3,226	23	1,246	192	33,599	839	69	5,585	1,019	181,411	4,065	15
16	Kentucky	24	2,951	514	112,609	2,294	35	2,413	424	78,026	1,509	59	5,364	938	190,635	3,803	16
17	Louisiana	13	2,214	361	91,985	1,686	23	1,988	272	65,538	1,212	36	4,202	633	157,523	2,898	17
18	Maine	7	640	113	19,444	417	27	2,038	401	61,956	1,409	34	2,678	514	81,400	1,826	18
19	Maryland	10	1,875	234	49,244	1,441	34	5,344	650	133,252	4,019	44	7,219	884	182,496	5,460	19
20	Massachusetts	17	2,860	593	85,047	2,274	110	12,729	2,182	360,681	9,147	127	15,589	2,775	445,728	11,421	20
21	Michigan	37	6,019	1,343	229,237	4,604	95	10,035	1,716	338,711	7,926	132	16,054	3,059	567,948	12,530	21
22	Minnesota	44	4,799	875	184,866	3,938	72	4,974	893	160,312	3,580	116	9,773	1,768	345,178	7,518	22
23	Mississippi	6	752	120	33,889	628	30	1,499	316	63,665	929	36	2,251	436	97,554	1,557	23
24	Missouri	41	6,964	1,141	207,546	5,705	39	4,295	589	108,906	3,207	80	11,259	1,730	316,452	8,912	24
25	Montana	27	2,308	471	72,473	1,518	13	663	147	19,259	443	40	3,031	618	91,732	1,961	25
26	Nebraska	40	3,454	623	105,494	2,364	17	824	182	26,737	551	57	4,278	805	132,231	2,915	26
27	Nevada	2	152	28	6,393	116	2	58	15	1,762	29	4	210	43	8,155	145	27
28	New Hampshire	4	441	81	14,528	330	22	1,482	316	44,857	965	26	1,923	397	59,385	1,295	28
29	New Jersey	18	3,980	653	114,624	3,049	79	9,845	1,853	313,322	7,386	97	13,825	2,506	427,946	10,435	29
30	New Mexico	15	1,060	229	34,814	627	8	455	62	7,528	174	23	1,515	291	42,342	801	30
31	New York	71	13,126	1,907	318,215	9,954	224	37,545	4,908	946,265	29,192	295	50,671	6,815	1,264,480	39,146	31
32	North Carolina	14	1,639	359	58,111	1,216	84	6,984	1,397	278,964	4,928	98	8,623	1,756	337,075	6,144	32
33	North Dakota	32	2,145	440	76,880	1,414	9	653	114	20,005	391	41	2,798	554	96,885	1,805	33
34	Ohio	51	9,712	1,689	354,037	8,049	95	11,634	1,950	416,328	9,080	146	21,346	3,639	770,365	17,129	34
35	Oklahoma	17	1,869	418	66,955	1,366	21	1,467	228	38,875	839	38	3,336	646	105,830	2,205	35
36	Oregon	19	2,714	516	103,799	1,980	21	1,153	220	43,774	818	40	3,867	736	147,573	2,798	36
37	Pennsylvania	36	6,133	1,069	157,900	4,498	207	33,407	5,260	916,727	26,309	243	39,540	6,329	1,074,627	30,807	37
38	Rhode Island	2	382	60	8,251	296	13	2,132	406	62,518	1,549	15	2,514	466	70,769	1,845	38
39	South Carolina	6	689	137	27,222	513	25	2,367	397	85,632	1,589	31	3,056	534	112,854	2,102	39
40	South Dakota	20	1,785	359	54,553	1,243	19	796	189	28,626	548	39	2,581	548	83,179	1,791	40
41	Tennessee	16	2,808	389	99,926	2,024	28	2,584	386	73,126	1,821	44	5,392	775	173,052	3,845	41
42	Texas	58	7,196	1,493	307,470	5,275	85	5,429	731	168,168	3,305	143	12,625	2,224	475,633	8,580	42
43	Utah	9	1,179	298	45,480	845	6	436	95	18,307	323	15	1,615	393	63,787	1,168	43
44	Vermont	2	275	48	8,180	237	19	1,904	258	41,419	1,492	21	2,179	306	49,599	1,729	44
45	Virginia	5	722	137	26,212	500	51	4,727	940	174,358	3,401	56	5,449	1,077	200,570	3,901	45
46	Washington	25	3,229	688	117,741	2,058	40	3,583	693	132,674	2,498	65	6,812	1,381	250,415	4,556	46
47	West Virginia	11	1,434	254	60,603	1,274	21	2,195	302	67,730	1,713	32	3,629	556	128,333	2,987	47
48	Wisconsin	64	8,329	1,550	285,437	6,268	53	3,223	614	112,355	2,291	117	11,552	2,164	397,792	8,559	48
49	Wyoming	7	251	60	5,212	61	5	173	44	5,497	81	12	424	104	10,709	142	49
	Totals (1952)	1,136	158,389	28,821	5,389,869	119,782	2,146	232,598	37,193	7,024,248	171,527	3,282	390,987	66,014	12,414,117	291,309	
	(1951)	1,116	154,053	28,292	5,152,206	117,572	2,121	225,903	36,672	6,695,804	168,577	3,237	379,956	64,964	11,848,010	286,149	
	(1950)	1,097	150,078	27,736	4,944,745	114,992	2,072	218,788	36,040	6,309,157	163,093	3,169	368,866	63,776	11,253,902	278,085	
	(1949)	1,090	146,315	27,664	4,758,992	114,408	2,067	213,576	35,565	6,089,085	159,560	3,157	359,891	63,229	10,848,077	273,968	
	(1948)	1,068	144,036	27,645	4,719,967	115,225	2,016	208,936	34,990	5,933,318	159,825	3,084	352,972	62,635	10,653,285	275,050	
	(1947)	1,051	141,920	27,145	4,524,859	118,780	1,965	202,661	34,110	5,652,649	158,835	3,016	344,581	61,255	10,177,508	277,615	
	(1946)	1,050	138,096	26,256	4,098,042	115,358	1,942	198,885	33,120	5,100,117	153,580	2,992	336,981	59,376	9,198,159	268,938	
	(1945)	1,036	135,481	25,465	3,887,100	110,557	1,954	195,805	32,497	4,745,712	147,694	2,990	331,286	57,962	8,632,812	258,251	
	(1944)	1,020	133,090	24,948	3,707,991	105,940	1,961	195,624	31,854	4,590,048	144,328	2,981	328,714	56,802	8,304,039	250,268	
	(1943)	1,004	130,488	24,007	3,503,396	101,150	1,952	192,219	30,731	4,456,274	140,095	2,956	322,707	54,738	7,959,670	241,245	
	(1942)	977	126,141	22,262	3,211,162	94,521	1,949	190,150	29,154	4,252,486	141,633	2,926	316,291	51,416	7,463,648	236,154	
	(1941)	993	123,331	20,145	2,961,594	90,195	1,917	182,140	26,422	3,931,141	132,472	2,910	305,471	46,567	6,892,735	222,667	
	(1940)	998	120,809	18,561	2,679,876	85,007	1,903	177,681	24,978	3,574,974	125,757	2,901	298,490	43,539	6,254,850	210,764	
	(1939)	1,001	120,740	18,044	2,682,762	81,984	1,839	172,765	23,371	3,503,488	119,342	2,840	293,505	41,415	6,186,250	201,326	
	(1938)	981	119,521	17,320	2,531,796	80,576	1,776	169,980	22,523	3,316,310	117,558	2,757	289,501	39,843	5,848,106	198,134	
	(1937)	975	115,283	16,851	2,495,114	79,113	1,718	162,474	21,511	3,201,042	114,508	2,693	277,757	38,362	5,696,156	193,621	
	(1936)	969	113,288	16,360	2,286,064	74,037	1,742	162,586	21,238	2,972,708	107,510	2,711	275,854	37,598	5,258,772	181,547	
	(1935)	970	113,268	16,033	1,950,308	69,592	1,670	155,300	20,119	2,527,207	98,088	2,640	268,568	36,152	4,477,515	167,680	
	(1934)	970	113,263	16,067	1,786,522	63,851	1,676	154,449	20,184	2,377,213	93,216	2,646	267,712	36,251	4,163,735	157,067	
	(1933)	984	115,840	16,190	1,753,565	63,621											
	(1932)	1,001	117,555	16,125	1,918,214	70,119											
	(1931)	1,011	116,935	15,861	2,013,352	73,911											
	(1930)	1,017	116,846	15,615	.....	75,162											
	(1929)	1,024	113,555	15,037	.....	75,770											
	(1928)	1,056	114,613	13,190	.....	.....											
	(1927)	1,060	108,582	.....	.....	73,813											

dent mainly to postwar changes in the federal group. A net gain of 15,510 was reported in 1949, with further increases of 17,882 in 1950 and 73,076 in 1951. In the present survey the bed capacity is listed at 1,541,615 as compared with 1,529,988 in the previous year. The governmental hospitals reported 1,099,623 beds and the nongovernmental institutions 441,992, with corresponding totals of 1,097,720 and 432,268 in 1951. In the governmental division, shown in table C, the capacity varies from 12,549 in the city-county group to 691,408 in the state hospitals, where 626,111 beds are specifically assigned to psychiatric care. The federal hospitals list 211,510 beds including 117,561 in the Veterans Administration and 72,623 in the military hospitals. The U. S. Public Health Service reported 9,255, the Bureau of Indian Affairs 3,137, and the remaining federal hospitals 8,934.

In the nongovernmental classification the church and other nonprofit hospitals have a combined capacity of 390,987 beds, whereas the individual and partnership hospitals reported 26,183 and the corporations unrestricted as to profit 24,822. The corresponding totals for the preceding year were 379,956, 27,527, and 24,785 respectively.

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: C. PROPRIETARY

Marginal No.		Individual and Partnership					Corporations (Profit Unrestricted)					Total Proprietary					TOTAL NONGOVERNMENTAL: Totals of Tables 1B and 1C					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	34	1,090	250	43,921	661	12	800	156	28,414	518	46	1,890	406	72,335	1,179	75	5,204	939	178,141	3,501	1
2	Arizona	6	125	22	2,914	56	1	50	..	.....	...	7	175	22	2,914	56	33	2,219	355	75,056	1,470	2
3	Arkansas	24	870	216	30,734	410	2	55	15	1,259	17	26	925	231	31,993	427	48	3,008	565	108,229	1,834	3
4	California	69	2,813	324	67,419	2,093	48	2,539	295	82,271	1,845	117	5,352	619	149,690	3,938	282	24,515	3,988	882,346	18,810	4
5	Colorado	7	248	26	4,029	137	4	164	16	3,303	123	11	412	42	7,332	260	73	6,020	864	171,140	4,232	5
6	Connecticut	..	.....	...	.....	.....	7	483	..	1,297	343	7	483	...	1,297	343	50	8,800	1,297	254,421	6,612	6
7	Delaware	..	.....	...	.....	.....	1	15	6	315	7	1	15	6	315	7	10	1,339	243	41,375	901	7
8	Dist. of Columbia	2	49	10	939	22	1	237	61	10,590	210	3	286	71	11,529	232	18	3,302	625	116,448	2,500	8
9	Florida	28	917	159	22,645	443	6	292	84	13,404	176	34	1,209	243	36,049	619	89	6,156	1,092	181,512	3,636	9
10	Georgia	33	894	159	29,290	492	13	520	85	19,860	326	46	1,414	244	49,150	818	80	4,830	781	169,064	3,149	10
11	Idaho	10	237	51	8,501	122	1	33	12	1,885	17	11	270	63	10,386	139	32	1,573	407	57,033	938	11
12	Illinois	33	1,211	56	12,289	936	21	1,422	74	22,465	1,027	54	2,633	130	34,754	1,963	263	31,419	4,826	932,261	23,851	12
13	Indiana	10	258	41	7,196	161	7	499	20	15,393	299	17	757	61	22,589	460	70	8,002	1,499	302,485	6,213	13
14	Iowa	18	447	106	13,047	289	4	152	27	3,340	98	22	599	133	16,387	387	90	8,195	1,385	249,683	5,709	14
15	Kansas	14	278	76	6,889	159	..	.....	..	.....	...	14	278	76	6,889	159	83	5,863	1,095	188,300	4,224	15
16	Kentucky	9	239	54	9,899	127	11	533	85	25,710	399	20	772	139	35,609	526	79	6,136	1,077	226,244	4,329	16
17	Louisiana	47	1,259	306	48,980	627	15	615	98	30,385	356	62	1,874	404	79,365	983	98	6,076	1,037	236,888	3,881	17
18	Maine	4	103	32	2,451	63	4	117	14	2,374	67	8	220	46	4,825	130	42	2,898	560	86,225	1,956	18
19	Maryland	5	209	...	1,237	160	3	190	..	506	156	8	399	...	1,743	316	52	7,618	884	184,239	5,776	19
20	Massachusetts	5	145	20	2,874	91	14	657	72	11,419	474	19	802	92	14,293	565	146	16,391	2,867	460,021	11,986	20
21	Michigan	19	492	60	11,575	418	11	643	30	7,498	493	30	1,135	90	19,073	911	162	17,189	3,149	587,021	13,441	21
22	Minnesota	13	213	72	4,725	118	9	801	12	23,075	616	22	1,014	84	27,800	734	138	10,787	1,852	372,978	8,252	22
23	Mississippi	20	532	113	17,800	264	4	174	27	7,677	95	24	706	140	25,477	359	60	2,957	576	123,031	1,916	23
24	Missouri	21	597	144	19,135	364	11	491	135	7,964	274	32	1,088	279	27,099	638	112	12,347	2,009	343,551	9,550	24
25	Montana	4	108	25	2,606	61	2	43	6	1,970	24	6	151	31	4,576	85	46	3,182	649	96,308	2,046	25
26	Nebraska	25	523	164	14,579	267	5	227	36	3,591	149	30	750	200	18,170	416	87	5,028	1,005	150,401	3,331	26
27	Nevada	1	45	12	2,188	30	..	.....	..	.....	...	1	45	12	2,188	30	5	255	55	10,343	175	27
28	New Hampshire	..	.....	...	.....	.....	1	45	..	57	43	1	45	...	57	43	27	1,968	397	59,442	1,338	28
29	New Jersey	6	414	10	1,714	325	4	202	..	829	183	10	616	10	2,543	508	107	14,441	2,516	430,489	10,943	29
30	New Mexico	1	20	...	70	8	..	.....	..	.....	...	1	20	...	70	8	24	1,535	291	42,412	809	30
31	New York	33	1,639	216	40,225	1,144	32	3,712	542	109,093	2,688	65	5,351	758	149,318	3,832	360	56,022	7,573	1,413,798	42,978	31
32	North Carolina	19	549	109	18,068	303	6	352	31	8,171	235	25	901	140	26,239	538	123	9,524	1,896	363,314	6,682	32
33	North Dakota	..	.....	...	.....	.....	..	.....	..	.....	...	..	.....	...	.....	...	41	2,798	554	96,885	1,805	33
34	Ohio	9	275	7	1,686	215	10	707	20	7,641	592	19	982	27	9,327	807	165	22,328	3,666	779,692	17,936	34
35	Oklahoma	32	1,016	225	41,446	633	5	210	34	7,217	155	37	1,226	259	48,663	788	75	4,562	905	154,493	2,993	35
36	Oregon	9	287	66	10,671	159	10	738	94	16,498	587	19	1,025	160	27,169	746	59	4,892	896	174,742	3,544	36
37	Pennsylvania	16	517	70	7,191	347	8	456	18	4,441	858	24	973	88	11,632	705	267	40,513	6,417	1,086,259	31,512	37
38	Rhode Island	..	.....	...	.....	.....	..	.....	..	.....	...	..	.....	...	.....	...	15	2,514	466	70,769	1,845	38
39	South Carolina	7	177	35	7,425	74	1	28	..	150	28	8	205	35	7,575	102	39	3,261	509	120,429	2,204	39
40	South Dakota	3	36	15	985	20	..	.....	..	.....	...	3	36	15	985	20	42	2,617	563	84,164	1,811	40
41	Tennessee	45	1,030	245	38,731	558	13	534	95	20,310	362	58	1,564	340	59,041	920	102	6,956	1,115	232,093	4,765	41
42	Texas	203	4,459	1,033	171,767	2,372	40	1,764	362	75,657	1,244	243	6,223	1,395	247,424	3,616	386	18,848	3,619	723,057	12,196	42
43	Utah	4	75	33	2,366	38	1	32	18	1,032	15	5	107	51	3,398	53	20	1,722	444	67,185	1,221	43
44	Vermont	2	42	17	1,225	19	..	.....	..	.....	...	2	42	17	1,225	19	23	2,221	323	50,824	1,748	44
45	Virginia	11	320	81	13,099	181	22	1,973	302	70,510	1,528	33	2,293	383	83,609	1,709	89	7,742	1,460	284,179	5,610	45
46	Washington	16	534	90	19,323	347	6	330	59	12,625	233	22	864	149	31,948	580	87	7,676	1,530	282,363	5,136	46
47	West Virginia	9	555	88	23,789	442	19	1,521	245	69,975	1,272	28	2,076	333	93,764	1,714	60	5,705	889	222,097	4,701	47
48	Wisconsin	11	219	50	5,559	169	7	466	20	3,416	410	18	685	70	8,975	579	135	12,237	2,234	406,767	9,138	48
49	Wyoming	6	117	32	3,220	39	..	.....	..	.....	...	6	117	32	3,220	39	18	541	136	13,929	181	49
	Totals (1952)	903	26,183	4,920	796,422	15,964	402	24,822	3,206	733,587	18,042	1,305	51,005	8,126	1,530,009	34,006	4,587	441,992	74,140	13,944,126	325,315	
	(1951)	906	27,527	5,310	820,493	16,564	402	24,785	3,340	702,200	17,868	1,368	52,312	8,650	1,522,693	34,432	4,605	432,268	73,614	13,370,703	320,581	
	(1950)	958	26,561	5,321	774,937	15,944	391	24,444	3,490	677,304	17,287	1,349	51,005	8,811	1,452,241	33,231	4,518	419,871	72,587	12,706,143	311,316	
	(1949)	1,077	29,669	6,099	870,668	17,947	401	24,315	3,673	682,443	17,193	1,478	53,984	9,772	1,553,111	35,140	4,635	413,875	73,001	12,401,188	309,108	
	(1948)	973	27,567	5,668	814,776	17,457	378	23,214	3,536	664,222	17,078	1,351	50,781	9,204	1,478,998	34,535	4,435	403,753	71,839	12,132,283	309,585	
	(1947)	984	28,325	6,137	848,082	18,303	359	22,111	3,262	599,580	16,708	1,343	50,436	9,399	1,447,662	35,011	4,359	395,017	70,654	11,625,170	312,626	
	(1946)	980	28,116	6,114	817,301	17,114	346	20,883	2,927	539,829	15,470	1,326	48,999	9,041	1,357,130	32,584	4,318	385,980	68,417	10,555,289	301,522	
	(1945)	987	30,216	5,597	715,908	17,442	351	20,724	2,986	509,569	15,140	1,338	50,940	8,583	1,225,477	32,582	4,328	382,226	66,545	9,858,289	290,833	
	(1944)	1,011	27,301	5,648	678,965	16,972	357	21,652	3,052	508,624	16,051	1,368	48,953	8,700	1,187,589	33,023	4,349	377,667	65,502	9,491,628	283,291	
	(1943)	1,031	27,314	5,370	638,999	16,282	384	23,094	3,187	513,202	15,865	1,415	50,408	8,557	1,152,201	32,147	4,371	373,115	63,296	9,111,871	273,392	
	(1942)	1,089	27,996	5,147	576,466	15,715	406	23,759	3,057	495,821	15,521	1,495	51,755	8,204	1,072,287	31,236	4,421	368,046	59,620	8,535,935	267,390	
	(1941)	1,149	28,760	5,054	545,884	16,582	435	24,639	3,048	494,967	15,808	1,584	53,399	8,102	1,040,851	32,480	4,494	358,870	54,669	7,933,586	255,147	
	(1940)	1,174	28,958	4,820	500,040	15,049	449	25,108	3,021	463,654	15,686	1,623	54,066	7,841	963,694	30,735	4,524	352,556	51,380	7,218,544	241,499	
	(1939)	1,190	29,879	4,756	501,860	14,955	456	26,496	2,989	456,759	16,154	1,646	56,375	7,745	958,619	31,109	4,486	349,880	49,160	7,144,869	232,435	
	(1938)	1,188	30,193	4,557	495,553	15,255	493	26,550	3,236	470,136	15,630	1,681	56,743	7,793	965,689	30,885	4,438	346,244	47,636	6,813,795	229,019	
	(1937)	1,183	29,957	4,766	508,359	15,458	530	28,085	3,516	507,077	16,477	1,713	58,042	8,282	1,015,436	31,935	4,406	335,799	46,644	6,711,592	225,556	
	(1936)	1,204	28,496	4,356	437,797	13,672	550	28,511	3,629	497,457	16,462	1,754	57,007	7,985	935,254	30,134	4,465	332,881	45,583	6,194,026	211,681	
	(1935)	1,255	29,913	4,384	413,997	14,212	627	34,946	4,357	532,590	18,697	1,882	64,859	8,741	946,587	32,909	4,522	333,427	44,893	5,424,102	200,589	
	(1934)	1,310	29,429	4,391	366,313	12,046	629	33,072	4,038	458,303	15,985	1,939	62,501	8,429	824,616	28,031	4,585	330,213	44,680	4,988,351	185,098	
	(1933)	1,435	33,385	4,962	381,861	13,746											4,661	332,573	44,64[illegible]	4,882,444	184,197	
	(1932)	1,522	25,759	5,094	428,256	16,309											4,758	334,987	44,572	5,178,598	198,277	
	(1931)	1,560	36,764	5,352	459,184	17,912											4,797	332,591	44,232	5,322,898	206,095	
	(1930)	1,620	38,557	5,233	.....	19,948											4,907	336,143	43,281	.....	212,645	
	(1929)	1,611	37,977	5,212	.....	20,604											4,870	324,596	41,877	.....	209,881	
	(1928)	1,699	39,710	4,843	.....	.....											5,039	325,500	37,641	.....	.....	
	(1927)	1,682	39,118	.....	.....	21,779											4,998	308,149	.....	.....	201,675	

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE—(Continued on next page)

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE—(Continued on next page)

Marginal No.		General					Nervous and Mental					Tuberculosis					Maternity					Industrial					Eye, Ear, Nose and Throat					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	86	7,744	1,323	286,463	5,341	7	11,257	2	8,844	10,906	7	700	..	1,123	681	1	45	20	136	37	..	...	..	.....	...	..	...	..	.....	...	1
2	Arizona	46	3,688	555	107,394	2,649	1	1,640	..	866	1,601	11	1,477	..	5,025	1,084	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	2
3	Arkansas	67	5,521	852	154,146	3,872	2	6,875	..	3,662	6,670	2	1,555	..	1,840	1,503	..	...	...	.....	...	2	275	..	6,118	137	..	...	..	.....	...	3
4	California	273	52,400	5,201	1,272,448	41,313	45	46,447	..	31,842	45,768	27	6,794	..	7,975	6,135	9	306	227	6,641	207	2	670	..	11,756	555	2	55	..	3,368	24	4
5	Colorado	73	9,958	1,066	209,684	7,602	8	7,571	..	4,444	7,253	8	939	..	788	639	2	78	30	364	17	1	11	..	327	3	..	...	..	.....	...	5
6	Connecticut	38	8,084	1,303	256,521	6,154	13	12,881	..	5,561	12,250	5	1,296	..	1,187	1,119	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	6
7	Delaware	10	1,554	243	43,480	1,092	3	2,236	..	1,081	2,255	2	190	..	178	174	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	7
8	District of Columbia	16	6,712	736	143,479	5,200	2	7,582	3	1,505	7,570	1	660	..	552	614	2	144	122	7,168	111	..	...	..	.....	...	1	100	..	6,360	57	8
9	Florida	115	12,069	1,791	330,268	8,063	6	8,388	5	3,518	7,767	5	1,716	..	1,605	1,482	2	54	48	2,196	28	..	...	..	.....	...	1	10	..	710	6	9
10	Georgia	114	11,286	1,566	345,598	7,481	7	12,983	7	8,413	12,778	1	2,000	..	1,373	1,687	..	...	...	.....	...	2	140	..	4,295	88	1	25	..	2,673	20	10
11	Idaho	46	2,345	573	76,445	1,360	3	2,056	1	864	1,933	1	70	..	70	70	1	10	12	60	1	..	...	..	.....	...	..	...	..	.....	...	11
12	Illinois	223	37,247	5,210	1,074,978	28,081	32	54,835	11	23,317	51,554	29	4,058	1	4,334	3,471	5	615	184	7,048	348	2	113	..	2,978	75	3	181	..	3,828	101	12
13	Indiana	104	12,638	2,260	419,834	9,919	15	16,843	..	5,890	15,513	11	1,714	..	2,219	1,419	..	...	...	.....	...	1	45	..	642	28	1	12	..	1,046	4	13
14	Iowa	102	10,087	1,582	297,850	6,691	12	11,940	1	5,037	11,307	5	730	..	614	637	2	82	44	210	49	..	...	..	.....	...	..	...	..	.....	...	14
15	Kansas	114	9,282	1,453	258,660	6,952	7	8,639	..	4,347	7,968	2	458	..	588	400	1	57	30	108	20	2	242	..	3,832	183	..	...	..	.....	...	15
16	Kentucky	88	10,411	1,420	298,554	7,679	11	11,188	1	9,501	10,479	9	1,536	..	2,259	1,330	1	26	26	1,119	15	1	90	..	3,119	57	..	...	..	.....	...	16
17	Louisiana	103	12,450	1,507	355,780	8,498	5	8,995	1	3,559	8,611	5	532	..	731	328	1	44	8	63	18	1	60	..	832	28	1	125	..	5,510	57	17
18	Maine	41	3,033	600	89,472	2,086	6	5,427	2	3,959	4,968	4	461	..	436	378	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	18
19	Maryland	46	11,721	1,303	275,296	9,492	16	12,840	..	8,079	12,362	6	1,498	..	1,110	1,067	..	...	...	.....	...	..	...	..	.....	...	3	116	..	5,910	50	19
20	Massachusetts	139	26,072	3,241	555,869	19,780	31	34,562	11	13,036	33,519	23	4,394	5	5,346	3,286	4	360	319	12,201	268	..	...	..	.....	...	2	191	..	6,865	120	20
21	Michigan	184	25,773	3,858	763,657	20,597	22	32,811	3	12,205	31,022	22	4,832	80	11,030	4,385	2	80	62	2,095	46	2	59	..	1,531	37	1	15	..	139	1	21
22	Minnesota	167	14,201	2,319	445,636	10,498	14	16,197	17	7,063	15,011	11	1,698	..	1,508	1,344	3	98	80	2,792	36	..	...	..	.....	...	1	185	..	6,765	133	22
23	Mississippi	95	5,934	1,042	190,737	3,641	6	6,671	..	5,048	6,379	1	650	2	478	423	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	23
24	Missouri	111	16,011	2,317	421,749	11,939	15	16,140	2	4,348	15,379	6	2,064	1	2,676	1,786	6	219	165	974	117	3	494	..	10,470	316	..	...	..	.....	...	24
25	Montana	54	3,855	673	100,983	2,398	1	1,988	..	957	1,944	1	214	..	360	205	..	...	...	.....	...	1	85	..	2,124	59	1	8	..	1,108	3	25
26	Nebraska	99	6,467	1,088	178,336	4,192	5	6,815	2	1,888	6,634	1	225	..	138	163	2	49	29	212	33	..	...	..	.....	...	..	...	..	.....	...	26
27	Nevada	15	1,037	148	27,546	755	1	425	..	180	392	..	.....	..	.....	.....	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	27
28	New Hampshire	31	2,382	458	68,156	1,618	2	3,518	..	1,082	3,329	2	133	..	146	125	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	28
29	New Jersey	89	17,316	2,657	477,107	12,487	19	27,117	2	8,886	25,987	15	3,906	2	4,552	3,157	2	398	391	10,582	185	..	...	..	.....	...	1	65	..	2,955	40	29
30	New Mexico	37	2,632	475	70,758	1,532	4	1,343	..	827	1,272	5	831	1	1,351	653	..	...	...	.....	...	1	80	..	1,256	61	..	...	..	.....	...	30
31	New York	312	70,115	8,200	1,718,681	54,145	57	121,862	59	32,783	117,612	46	10,681	..	11,384	9,637	9	602	328	19,273	419	1	24	1	461	11	7	653	..	32,247	371	31
32	North Carolina	140	15,438	2,559	466,620	9,612	10	8,845	1	5,098	7,911	18	4,074	..	6,410	3,133	2	20	16	875	5	1	50	..	803	24	2	81	..	4,761	50	32
33	North Dakota	46	3,186	578	101,926	2,013	2	3,406	2	679	3,266	1	347	12	218	319	1	56	6	100	14	..	...	..	.....	...	..	...	..	.....	...	33
34	Ohio	158	27,497	4,219	888,415	21,336	29	36,997	1	14,627	35,165	24	4,603	..	3,925	3,950	9	250	202	9,387	151	1	18	..	196	4	1	6	..	793	3	34
35	Oklahoma	104	7,803	1,334	226,464	5,234	7	10,580	2	3,967	9,718	4	872	..	956	555	1	25	15	56	12	..	...	..	.....	...	..	...	..	.....	...	35
36	Oregon	62	5,650	1,005	196,334	4,067	5	5,498	1	2,219	5,345	4	488	..	783	440	1	14	12	187	6	..	...	..	.....	...	..	...	..	.....	...	36
37	Pennsylvania	225	44,943	6,673	1,139,639	35,127	40	53,124	..	14,980	50,972	16	4,764	..	3,989	3,862	6	360	82	2,100	288	..	...	..	.....	...	4	345	..	11,623	234	37
38	Rhode Island	15	4,197	339	77,772	3,191	4	4,535	9	1,664	4,362	1	572	..	326	408	1	175	175	8,354	145	..	...	..	.....	...	..	...	..	.....	...	38
39	South Carolina	60	7,348	1,054	240,860	5,626	4	6,863	2	2,587	6,767	5	883	..	746	703	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	39
40	South Dakota	56	3,511	653	98,611	2,424	3	3,324	..	842	3,140	2	271	..	284	199	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	40
41	Tennessee	102	11,234	1,575	330,591	8,529	12	10,350	8	6,267	10,224	11	2,058	15	3,546	1,673	..	...	...	.....	...	..	...	..	.....	...	7	149	..	8,426	76	41
42	Texas	436	33,062	4,880	999,040	22,577	18	17,022	..	10,326	18,612	19	4,120	..	5,544	3,434	4	113	38	1,097	57	5	443	..	10,408	287	9	104	..	6,026	38	42
43	Utah	26	2,182	520	78,722	1,520	3	2,629	..	682	2,073	1	100	..	126	71	1	23	24	1,269	15	..	...	..	.....	...	..	...	..	.....	...	43
44	Vermont	23	1,721	323	53,197	1,222	3	2,287	..	959	2,439	2	143	..	144	122	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	44
45	Virginia	95	16,119	1,932	411,315	12,082	11	14,855	12	9,879	14,552	7	1,356	..	1,185	1,270	..	...	...	.....	...	1	16	..	76	1	2	65	..	3,331	31	45
46	Washington	106	12,377	1,821	353,994	8,534	8	9,721	..	4,238	9,638	12	3,040	..	4,655	2,568	1	38	16	86	3	1	21	..	418	12	..	...	..	.....	...	46
47	West Virginia	65	7,468	977	248,478	5,954	5	4,078	..	1,478	3,847	5	1,273	..	1,024	986	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	47
48	Wisconsin	138	15,279	2,555	479,333	11,322	40	16,820	10	8,705	16,293	21	2,545	..	3,047	2,153	1	76	15	234	36	..	...	..	.....	...	..	...	..	.....	...	48
49	Wyoming	29	1,883	294	53,181	1,166	3	1,923	..	463	1,739	1	50	..	41	25	..	...	...	.....	...	..	...	..	.....	...	..	...	..	.....	...	49
	Totals (1952)	4,924	640,923	90,371	17,760,057	475,193	585	732,929	178	312,252	704,056	428	89,571	119	109,925	75,253	83	4,417	2,726	96,987	2,687	31	2,936	1	61,642	1,966	51	2,491	..	114,444	1,419	
	(1951)	4,890	640,207	88,505	17,065,821	470,692	596	728,187	192	307,010	697,521	430	88,379	100	107,181	73,588	90	4,632	2,946	105,663	2,953	32	2,837	2	60,951	1,890	53	2,595	..	114,516	1,502	
	(1950)	4,713	587,917	85,582	15,830,170	433,364	579	711,921	221	307,165	687,567	431	85,746	89	113,275	72,370	92	4,699	2,994	102,147	3,060	27	2,661	31	58,180	1,807	51	2,560	3	113,951	1,483	
	(1949)	4,761	574,683	85,502	15,450,311	429,443	606	705,423	226	308,055	675,096	444	83,470	110	113,078	69,476	102	5,087	3,153	98,543	3,059	33	2,945	1	60,159	1,925	52	2,542	14	118,665	1,538	
	(1948)	4,589	576,459	83,497	15,160,062	437,590	586	691,499	279	305,000	664,399	438	81,993	21	105,588	66,484	100	5,226	3,319	98,114	3,398	33	2,940	1	61,817	2,054	46	2,531	13	118,355	1,524	
	(1947)	4,539	592,453	82,303	14,665,195	456,761	585	680,913	259	291,954	651,578	441	81,328	32	99,080	62,575	100	5,442	3,312	100,382	3,929	33	2,914	..	57,110	1,869	44	2,534	13	116,563	1,553	
	(1946)	4,523	641,331	79,534	14,051,508	496,527	575	674,930	322	271,209	635,769	450	83,187	36	99,741	61,931	101	5,392	3,426	82,191	3,777	34	2,980	..	56,061	1,838	46	2,749	16	111,417	1,710	
	(1945)	4,744	922,549	78,919	15,228,270	665,105	563	657,393	295	248,876	624,349	449	78,774	54	86,186	59,767	106	5,656	3,544	77,078	3,741	36	2,963	..	58,394	1,847	42	2,664	8	108,531	1,615	
	(1944)	4,833	925,818	76,570	15,060,403	570,331	566	648,745	206	226,393	618,951	453	79,848	38	88,281	63,025	107	5,762	3,708	81,964	3,805	39	2,893	6	55,974	1,789	42	2,695	6	102,898	1,489	
	(1943)	4,885	850,576	72,839	14,454,638	529,340	575	650,993	210	208,677	619,447	455	79,860	112	91,674	65,302	112	6,085	3,800	84,974	3,908	41	3,226	2	61,249	1,920	40	2,421	6	99,948	1,322	
	(1942)	4,557	594,260	67,115	11,634,288	405,382	586	646,118	216	214,117	609,773	468	82,372	116	101,526	70,905	113	5,903	3,777	80,375	4,171	36	2,896	2	46,723	1,608	42	2,546	10	100,544	1,397	
	(1941)	4,518	533,498	61,732	10,646,947	363,614	596	638,144	219	208,592	603,179	477	82,365	99	101,473	70,577	116	5,318	3,573	64,874	3,472	39	2,960	14	49,201	1,662	41	2,502	4	97,043	1,388	
	(1940)	4,432	462,360	58,073	9,219,496	325,160	602	621,284	161	190,376	590,712	479	78,246	44	90,936	67,007	116	5,647	3,380	60,518	3,534	33	2,792	3	41,835	1,504	41	2,470	4	97,853	1,343	
	(1939)	4,356	444,947	55,183	9,018,316	307,991	600	606,284	110	190,249	577,103	480	75,972	38	90,615	65,487	118	5,553	3,196	59,381	3,552	40	3,215	5	45,085	1,622	41	2,467	..	99,291	1,329	
	(1938)	4,286	425,324	52,924	8,545,930	292,870	592	591,822	137	198,703	562,337	493	76,022	41	100,801	66,242	120	5,969	3,361	66,145	3,699	37	2,992	2	42,666	1,482	38	1,992	..	90,863	1,080	
	(1937)	4,245	412,091	51,668	8,349,773	288,280	579	570,616	124	195,624	546,906	508	76,751	33	101,839	64,800	114	5,466	3,487	59,949	3,480	36	2,835	..	41,028	1,549	39	1,946	3	95,241	1,115	
	(1936)	4,207	402,605	49,604	7,755,848	271,658	584	548,952	109	184,936	524,993	506	73,692	36	99,234	63,266	125	6,402	3,846	67,925	4,065	44	3,159	10	41,862	1,536	44	2,118	32	99,273	1,113	
	(1935)	4,257	406,174	48,757	6,875,182	261,294	592	529,311	132	173,009	507,269	496	70,373	58	86,113	60,738	121	6,141	3,825	66,693	3,582	52	3,421	11	41,432	1,576	44	2,263	11	97,181	1,089	
	(1934)	4,198	393,425	47,856	6,291,556	237,395	614	513,845	84	172,415	488,481	495	70,063	..	82,455	59,689	130	7,625	4,131	76,980	4,647	113	5,575	343	69,609	2,423	55	2,793	19	103,720	1,265	

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE—(Continued)

Marginal No.		Children's					Orthopedic					Isolation					Convalescent and Rest					Hospital Departments of Institutions					All Other Hospitals					Totals					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	1	65	..	2,810	50	1	100	..	596	78	..	.....	..	.....	...	1	16	..	262	8	5	199	1	4,015	77	..	.....	..	.....	.....	109	20,126	1,346	304,249	17,178	1
2	Arizona	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	2	31	..	84	19	..	.....	..	.....	.....	..	.....	..	.....	.....	60	6,836	555	113,369	5,353	2
3	Arkansas	1	75	8	943	58	1	116	..	1,410	50	1	350	6	9,546	159	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	76	14,767	866	177,665	12,449	3
4	California	5	499	..	15,678	342	2	135	..	2,569	123	1	16	..	207	4	14	465	..	1,659	369	9	1,972	1	12,061	1,661	6	3,863	..	3,765	3,609	395	113,622	5,429	1,369,969	100,110	4
5	Colorado	1	195	15	12,776	161	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	5	143	..	1,807	38	1	32	..	123	22	99	18,927	1,111	230,313	15,735	5
6	Connecticut	..	...	..	.....	...	1	197	..	260	159	1	150	..	170	17	2	155	..	807	100	8	1,100	11	6,735	436	2	129	2	98	106	70	23,992	1,316	271,339	20,341	6
7	Delaware	..	...	..	.....	...	1	85	..	232	50	..	.....	..	.....	...	..	.....	..	.....	...	1	486	7	278	433	..	.....	..	.....	.....	17	4,551	250	45,249	4,004	7
8	District of Columbia	1	225	..	9,815	139	..	...	..	.....	...	..	.....	..	.....	...	2	70	..	157	47	3	858	..	2,367	767	1	180	..	61	178	29	16,531	861	171,464	14,683	8
9	Florida	1	97	..	2,063	61	4	329	..	1,242	175	..	.....	..	.....	...	3	142	..	735	64	2	90	..	1,655	17	2	93	..	117	64	141	22,988	1,844	344,109	17,727	9
10	Georgia	1	40	4	1,194	34	3	285	..	1,633	249	..	.....	..	.....	...	2	55	..	374	45	3	190	..	3,230	76	1	80	..	278	60	135	27,084	1,577	369,061	22,518	10
11	Idaho	..	...	..	.....	...	1	36	..	171	34	..	.....	..	.....	...	..	.....	..	.....	...	1	40	..	781	8	..	.....	..	.....	.....	53	4,557	586	78,391	3,406	11
12	Illinois	3	348	..	7,822	202	4	182	..	383	140	2	208	..	2,828	66	25	1,135	2	5,163	884	8	523	..	11,865	157	6	3,361	..	1,585	1,914	342	102,836	5,408	1,146,129	87,593	12
13	Indiana	..	...	..	.....	...	1	100	6	1,762	40	..	.....	..	.....	...	3	304	..	7,129	159	4	379	..	2,713	171	1	21	..	339	18	141	32,056	2,266	441,574	27,271	13
14	Iowa	..	...	..	.....	...	..	...	..	.....	...	1	30	1	359	6	1	17	..	33	14	3	260	..	1,680	153	..	.....	..	.....	.....	126	23,146	1,628	305,783	18,857	14
15	Kansas	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	6	377	1	5,507	129	1	25	..	150	6	133	19,080	1,484	273,192	15,658	15
16	Kentucky	1	173	..	2,456	60	2	120	..	765	102	..	.....	..	.....	...	1	50	..	396	41	1	29	..	254	6	..	.....	..	.....	.....	115	23,623	1,447	318,423	19,769	16
17	Louisiana	..	...	..	.....	...	1	60	..	166	61	..	.....	..	.....	...	1	29	..	52	9	1	100	..	1,182	9	1	450	..	68	409	120	22,845	1,516	367,943	18,028	17
18	Maine	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	1	21	..	11	17	..	.....	..	.....	.....	..	.....	..	.....	.....	52	8,942	602	93,878	7,449	18
19	Maryland	..	...	..	.....	...	2	205	..	975	151	..	.....	..	.....	...	2	129	..	236	88	1	180	..	42	179	4	6.6	..	285	546	80	27,305	1,303	291,933	23,935	19
20	Massachusetts	3	590	13	12,807	349	4	368	..	341	233	2	52	..	158	4	1	25	..	21	12	6	316	..	3,337	184	4	509	..	4,700	441	219	67,439	3,589	614,681	58,146	20
21	Michigan	1	175	..	5,971	149	2	190	..	959	144	2	130	..	1,611	65	8	414	..	1,694	330	9	866	..	5,935	642	4	204	..	2,742	140	259	65,549	4,003	809,569	57,558	21
22	Minnesota	1	75	..	2,962	63	3	334	..	871	279	..	.....	..	.....	...	3	301	..	549	286	6	225	..	2,438	112	3	1,297	..	610	1,220	212	34,611	2,416	471,194	28,982	22
23	Mississippi	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	102	13,255	1,044	196,263	10,443	23
24	Missouri	2	281	..	5,617	221	2	165	..	400	143	..	.....	..	.....	...	1	90	..	184	59	6	1,485	..	4,110	910	6	1,876	..	3,650	1,673	158	38,825	2,485	454,178	32,543	24
25	Montana	..	...	..	.....	...	1	26	25	368	30	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	59	6,176	698	105,900	4,639	25
26	Nebraska	1	100	..	3,509	81	2	140	..	1,024	82	..	.....	..	.....	...	1	55	..	49	53	2	52	..	1,276	18	..	.....	..	.....	.....	113	13,903	1,119	186,432	11,256	26
27	Nevada	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	16	1,462	148	27,726	1,147	27
28	New Hampshire	..	...	..	.....	...	..	...	..	.....	...	1	100	..	100	4	..	.....	..	.....	...	2	86	..	2,500	45	..	.....	..	.....	.....	38	6,219	458	71,984	5,121	28
29	New Jersey	1	88	..	3,404	35	7	852	..	3,160	258	4	600	..	2,237	178	7	521	..	1,632	437	8	373	3	3,973	231	1	24	..	49	18	154	50,760	3,055	518,557	43,013	29
30	New Mexico	..	...	..	.....	...	1	100	..	528	84	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	48	4,986	476	74,720	3,602	30
31	New York	3	363	20	2,350	153	11	1,184	..	4,997	799	5	995	..	9,909	683	13	1,464	..	7,612	937	23	5,161	40	17,468	4,348	22	8,155	110	29,772	6,424	509	221,259	8,818	1,886,997	195,539	31
32	North Carolina	1	40	10	1,917	25	3	340	..	924	250	..	.....	..	.....	...	1	25	..	45	18	2	209	..	2,093	76	1	40	..	60	34	181	29,162	2,586	489,306	21,138	32
33	North Dakota	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	1	30	..	42	29	51	7,025	598	102,965	5,641	33
34	Ohio	4	571	..	22,167	473	3	180	..	571	114	..	.....	..	.....	...	8	341	1	2,939	272	10	609	..	7,318	243	4	1,212	..	945	1,059	251	72,344	4,423	951,283	62,770	34
35	Oklahoma	..	...	..	.....	...	2	118	..	2,398	96	..	.....	..	.....	...	..	.....	..	.....	...	4	183	..	4,088	38	..	.....	..	.....	.....	122	19,581	1,351	237,929	15,653	35
36	Oregon	..	...	..	.....	...	1	60	..	350	60	2	135	5	711	55	..	.....	..	.....	...	1	30	..	730	7	1	16	..	286	4	77	11,891	1,023	201,600	9,984	36
37	Pennsylvania	4	525	..	13,489	393	5	585	..	759	436	4	950	2	2,801	353	10	481	..	3,009	380	13	1,495	..	6,843	922	8	756	..	4,702	635	335	108,328	6,757	1,203,934	93,602	37
38	Rhode Island	..	...	..	.....	...	..	...	..	.....	...	1	253	..	3,309	121	..	.....	..	.....	...	..	.....	..	.....	.....	1	72	..	19	71	23	9,804	523	91,444	8,298	38
39	South Carolina	..	...	..	.....	...	1	60	..	343	59	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	70	15,154	1,056	244,536	13,155	39
40	South Dakota	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	1	36	..	245	19	..	.....	..	.....	.....	62	7,142	653	99,982	5,782	40
41	Tennessee	1	100	..	3,088	78	5	285	..	3,238	190	..	.....	..	.....	...	2	155	..	870	79	4	796	..	3,316	637	2	111	33	937	44	146	25,238	1,681	360,279	21,550	41
42	Texas	6	277	4	6,025	183	2	110	..	653	85	2	450	10	6,218	158	8	292	..	1,670	217	9	559	..	6,702	196	4	309	..	3,485	252	522	56,861	4,932	1,057,194	46,096	42
43	Utah	1	70	..	187	43	1	58	..	110	48	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	33	5,062	544	81,096	3,770	43
44	Vermont	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	1	12	..	98	4	..	.....	..	.....	.....	29	4,163	323	54,398	3,787	44
45	Virginia	..	...	..	.....	...	2	160	..	795	117	..	.....	..	.....	...	1	35	..	64	22	4	239	..	1,933	142	..	.....	..	.....	.....	123	32,845	1,944	428,578	28,217	45
46	Washington	..	...	..	.....	...	2	185	..	3,113	159	..	.....	..	.....	...	..	.....	..	.....	...	2	169	..	1,376	45	2	264	..	3,637	235	134	25,815	1,837	371,517	21,194	46
47	West Virginia	..	...	..	.....	...	3	259	..	1,817	199	..	.....	..	.....	...	..	.....	..	.....	...	2	85	7	1,274	46	..	.....	..	.....	.....	80	13,163	984	254,071	11,032	47
48	Wisconsin	1	150	..	4,873	117	..	...	..	.....	...	2	227	..	1,336	31	4	148	..	277	140	4	598	..	969	548	2	110	4	42	85	213	35,953	2,584	498,816	30,725	48
49	Wyoming	..	...	..	.....	...	..	...	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	...	..	.....	..	.....	.....	..	.....	..	.....	.....	33	3,856	294	53,685	2,930	49
	Totals (1952)	45	5,122	74	143,623	3,470	87	7,209	31	39,883	5,277	31	4,646	24	41,560	1,904	128	6,966	3	37,733	5,106	180	20,570	71	134,194	13,750	92	23,835	149	62,547	19,296	6,665	1,541,615	93,747	18,914,847	1,309,377	
	(1951)	44	5,133	111	135,043	3,438	82	6,708	25	33,009	5,209	40	9,516	63	101,026	5,097	120	7,115	11	38,057	5,078	183	19,905	75	134,414	13,098	77	14,774	6	34,427	13,587	6,637	1,529,988	92,036	18,237,118	1,293,653	
	(1950)	44	5,087	138	129,784	3,401	86	6,963	25	35,223	5,526	44	8,554	77	135,877	4,036	113	6,415	4	33,860	4,529	178	18,547	30	123,854	11,806	72	15,842	6	40,027	13,808	6,430	1,456,912	89,200	17,023,513	1,242,777	
	(1949)	42	4,656	118	116,821	3,220	87	6,954	24	36,368	5,327	56	10,364	118	148,354	4,535	109	6,034	3	36,396	4,430	202	20,920	111	132,831	12,917	78	15,952	6	40,392	13,685	6,572	1,439,030	89,386	16,659,973	1,224,951	
	(1948)	39	4,530	105	112,699	3,148	85	6,924	16	35,065	5,033	61	12,073	146	220,776	5,681	97	6,516	20	37,242	4,689	189	23,361	177	126,235	15,047	72	9,468	2	41,821	8,107	6,335	1,423,520	87,596	16,422,774	1,217,154	
	(1947)	41	4,630	80	100,923	3,277	82	6,519	23	28,124	4,738	65	12,556	183	163,300	5,478	93	5,840	20	32,339	4,206	194	22,516	151	140,276	14,739	59	7,577	2	34,268	6,526	6,276	1,425,222	86,378	15,829,514	1,217,229	
	(1946)	42	4,490	110	96,026	3,257	82	6,518	19	26,960	4,700	70	11,497	220	146,836	5,249	97	6,579	30	32,608	3,852	202	21,253	128	144,664	13,566	58	7,808	4	34,231	7,278	6,280	1,468,714	84,145	15,153,452	1,239,454	
	(1945)	44	4,770	81	90,097	3,495	83	6,679	19	29,154	4,781	63	8,406	87	99,599	3,223	102	9,556	32	57,385	7,009	168	17,720	52	112,211	11,093	111	21,814	40	61,621	19,222	6,511	1,738,944	83,131	16,257,402	1,405,247	
	(1944)	44	4,459	39	85,243	3,096	84	6,864	10	29,435	4,673	61	8,300	67	48,387	2,864	109	13,825	34	61,548	7,993	216	24,484	97	153,057	15,927	57	6,252	10	43,265	5,531	6,611	1,729,945	80,791	16,036,848	1,299,474	
	(1943)	40	4,191	19	84,404	2,705	84	7,025	..	34,871	5,020	55	8,313	44	49,570	3,219	126	12,453	42	34,847	8,211	203	20,224	56	141,658	13,280	39	3,884	4	28,188	3,450	6,655	1,649,254	77,134	15,374,698	1,257,124	
	(1942)	43	4,314	44	84,759	2,908	79	7,313	29	36,178	5,516	52	6,279	33	37,936	2,087	139	9,793	40	35,929	8,041	194	18,532	64	145,865	12,300	36	3,501	2	27,370	2,840	6,345	1,383,827	71,448	12,545,610	1,126,028	
	(1941)	52	6,067	337	117,428	4,130	82	7,382	10	38,270	5,691	52	6,356	21	36,399	2,093	136	9,630	36	38,862	7,967	219	27,037	118	174,335	20,593	30	3,122	..	22,764	2,673	6,358	1,324,381	66,163	11,596,188	1,087,089	
	(1940)	46	4,781	137	92,234	3,263	84	7,662	15	37,294	5,858	57	7,350	25	40,513	3,114	142	8,721	35	36,594	6,776	226	21,702	62	156,436	15,318	33	3,230	..	23,463	2,582	6,291	1,226,245	61,939	10,087,548	1,026,171	
	(1939)	48	5,151	146	95,137	3,524	82	7,706	..	36,891	5,752	60	7,100	6	30,279	2,655	139	8,821	36	34,191	6,948	232	25,014	40	160,927	18,200	30	2,796	4	18,882	2,320	6,226	1,195,026	58,764	9,879,244	996,483	
	(1938)	52	5,410	115	93,420	3,761	75	7,125	..	33,386	5,620	54	6,145	17	34,017	2,511	121	5,816	34	36,265	4,305	235	21,808	112	142,714	14,730	63	10,925	4	36,165	7,069	6,166	1,161,380	56,747	9,421,075	965,706	
	(1937)	51	5,389	111	89,584	3,714	75	6,880	10	33,015	5,563	56	6,187	23	37,295	2,633	120	5,566	38	29,411	3,965	240	21,821	61	144,189	14,498	65	9,000	8	44,569	7,933	6,128	1,124,548	55,566	9,221,517	944,436	
	(1936)	52	5,279	150	89,916	3,422	71	6,333	10	30,499	5,127	61	6,896	84	37,053	2,886	130	6,039	38	32,504	4,191	282	25,213	299	157,227	17,831	84	10,033	17	50,608	8,428	6,189	1,096,721	54,225	8,646,885	908,516	
	(1935)	51	4,874	118	83,015	3,115	68	6,394	12	28,280	5,010	66	7,384	70	47,004	3,301	135	6,233	34	28,218	4,437	275	20,793	234	143,434	13,859	89	11,778	48	47,593	10,240	6,246	1,075,139	53,310	7,717,154	875,510	
	(1934)	58	5,386	146	87,571	3,629	69	6,389	12	28,076	5,003	71	7,430	45	38,949	2,934	125	5,456	45	24,083	3,580	312	21,982	310	135,272	14,590	94	8,132	85	36,730	6,462	6,334	1,048,101	53,026	7,147,416	830,098	

The general hospitals, with 640,207 beds in 1951, now list 640,923, or 41.5% of all hospital beds. In the governmental general hospitals the greatest number of beds will be found in the federal division, which listed 132,798 as compared with 21,541 in the state hospitals, 52,762 in the county institutions, 48,018 in the municipal hospitals, and 9,802 in the city-county group. These institutions, which now have a capacity of 264,921, listed 273,335 in the previous year.

The nongovernmental general hospitals reported 366,872 beds in 1951 and 376,002 in 1952. Reference should be made to table G, where it is shown that the church hospitals and other nonprofit associations have 304,804 general hospital beds, the individual and partnership institutions 19,010, and the corporations unrestricted as to profit 16,188. Again the greatest number of beds are found in the psychiatric hospitals, whose present total of 732,929 may be compared with the previous report of 728,187 in 1951. This, it should be noted, represents 47.5%, or nearly half of all hospital beds. Most of the psychiatric facilities are in the governmental group, which listed 713,056 or 97% of the combined total, whereas the nongovernmental division reported only 19,873. The state psychiatric hospitals alone can accommodate 626,111 patients. In the tuberculosis division the number of beds was increased in the last year from 88,379 to 89,571, a total representing 5.8% of all beds available in the registered hospitals. Here, as in the psychiatric field, the major facilities are represented in the governmental hospitals, which reported 79,838 beds compared with 9,733 in the nongovernmental group. The remaining institutions, shown in table D, have a combined capacity of 78,192, or approximately 5% of the total beds. Again reference should be made to table G, which presents a full summary of hospital data, including detailed information on beds, bassinets, admissions, average daily census, and hospital births.

Number of Patients Admitted

Comparative Totals
1951: 18,237,118
1952: 18,914,847

In the present survey the hospitals registered by the American Medical Association reported 18,914,847 admissions as compared with 18,237,118 in 1951. Previous reports show 7,155,976 admissions in 1931, 7,717,154 in 1935, 10,087,548 in 1940, and 16,257,402 in 1945. A reduction to 15,153,452 occurred the following year, but thereafter the hospital admissions again advanced, reaching 15,829,514 in 1947, 16,442,774 in 1948, 16,659,973 in 1949, and 17,023,513 in 1950.

The governmental group, with 71.3% of the hospital beds, received 4,970,721, or 26.3% of the patients admitted in 1952, whereas the corresponding total of the previous year was 4,866,415. The federal hospitals listed 1,494,366 admissions, the state institutions 711,512, the county hospitals 1,212,824, the municipal institutions 1,254,365, and the city-county hospitals 297,654. These may be compared with the following totals of 1951: 1,489,581; 769,599; 1,066,562; 1,257,575; and 285,098. In the federal division, shown in table F, the hospitals of the Army, Navy, and Air Force reported 875,329 admissions, the Veterans Administration 471,184, the U. S. Public Health Service 83,756, the Bureau of Indian Affairs 48,841, and the other federal hospitals 15,256. The nongovernmental hospitals, representing 28.6% of the present bed capacity, can be credited with 13,944,126 admissions, or 73.7% of all patients accepted for hospital care. Included are 5,389,869 admissions in the church hospitals, which last year listed 5,152,206. The other nonprofit associations, with a previous total of 6,695,804, reported 7,024,248, while the proprietary hospitals showed a total of 1,530,009 compared with 1,522,693 in 1951.

TABLE G.—*Summary of Hospital Service in the United States According to Type of Service and Agencies Concerned*

Type	Hospitals	Beds	Bassinets	Admissions	Average Census	Births
U. S. Totals	6,665	1,541,615	93,747	18,914,847	1,309,377	3,170,495
Federal						
General	292	132,798	3,230	1,399,537	100,523	117,397
N & M	39	61,215	3	45,250	59,767	6
TB	28	11,172	...	22,110	8,657	5
Other special	2	800	6	9,614	508	6
Institutions	25	2,525	7	17,855	1,430	18
Totals	386	211,510	3,246	1,494,366	170,745	117,432
State						
General	54	21,541	1,683	396,832	16,179	62,444
N & M	281	626,111	163	178,024	606,636	418
TB	92	30,230	29	28,398	25,131	107
Other special	26	4,848	42	27,423	3,477	775
Institutions	96	8,678	57	80,835	4,809	19
Totals	549	691,408	1,974	711,512	656,232	63,763
County						
General	451	52,762	6,494	1,154,184	37,659	188,249
N & M	37	22,068	8	6,442	21,261	.....
TB	169	25,750	3	26,450	22,184	29
Other special	17	8,050	386	20,539	5,841	8,548
Institutions	14	3,033	...	5,209	2,489	.....
Totals	688	111,663	6,891	1,212,824	89,434	196,826
City						
General	308	48,018	5,945	1,200,138	38,426	199,920
N & M	1	662	...	67	655	1
TB	27	10,939	86	16,464	9,961	3,428
Other special	31	8,965	12	28,473	5,346	21
Institutions	7	3,909	...	9,223	3,576	.....
Totals	374	72,493	6,043	1,254,365	57,964	203,370
City-County						
General	68	9,802	1,453	291,051	7,166	52,972
N & M	...	.....	...	.....	.....	.....
TB	11	1,747	...	2,367	1,554	.....
Other special	2	1,000	...	4,236	967	.....
Institutions	...	.....	...	.....	.....	.....
Totals	81	12,549	1,453	297,654	9,687	52,972
Church						
General	1,017	148,145	27,803	5,317,861	112,108	1,012,407
N & M	23	3,115	...	11,976	2,520	.....
TB	13	1,647	...	2,403	1,468	.....
Other special	78	5,266	1,011	56,895	3,652	21,750
Institutions	5	216	7	734	34	106
Totals	1,136	158,389	28,821	5,389,869	119,782	1,034,263
Nonprofit						
General	1,742	192,659	35,847	6,594,437	140,965	1,219,150
N & M	45	6,845	...	16,924	5,770	.....
TB	67	6,943	1	10,240	5,426	1
Other special	259	23,942	1,345	382,309	17,954	39,866
Institutions	33	2,209	...	20,338	1,412	.....
Totals	2,146	232,598	37,193	7,024,248	171,527	1,259,017
Individual and Partnership						
General	718	19,010	4,794	733,975	10,788	125,568
N & M	69	3,639	...	20,500	2,697	.....
TB	14	593	...	847	439	.....
Other special	102	2,941	126	41,100	2,150	4,270
Institutions	...	.....	...	.....	.....	.....
Totals	903	26,183	4,920	796,422	15,964	129,838
Corporations						
General	274	16,188	3,122	672,042	11,379	112,700
N & M	90	6,274	4	33,069	4,950	35
TB	7	550	...	646	433	.....
Other special	31	1,810	80	27,830	1,280	279
Institutions	...	.....	...	.....	.....	.....
Totals	402	24,822	3,206	733,587	18,042	113,014
Total all Hospitals	6,665	1,541,615	93,747	18,914,847	1,309,377	3,170,495

When classified by type of service, it is found that the general hospitals admitted 17,760,057, or 93.8% of all patients reported in 1952. This is an increase of 694,236 over the previous annual total of 17,065,821. In the governmental general hospitals the admissions advanced from 4,292,253 to 4,441,742, while in the nongovernmental group there was likewise an increase from 12,773,568 to 13,318,315. While the psychiatric hospitals received only 312,252, or 1.6% of all admissions, they maintained an average daily census greater than the total patient load in all other registered hospitals. It is apparent, therefore, that the average census, rather than the number of admissions, is more fully indicative of the volume of service carried out in the psychiatric field. The psychiatric hospitals in the governmental group admitted 229,783 patients in the last year, whereas the nongovernmental division reported 82,469. The corresponding totals for 1951 were 230,414 and 76,596. In the tuberculosis field, 109,925 patients were admitted as compared with 107,181 the previous year. Of this number 95,789 were registered in the governmental group and 14,136 in the nongovernmental hospitals.

Reference to table D will show that, out of every 1,000 admissions reported in the present survey, 938 were assigned to general hospitals, 16 to psychiatric institutions, 6 to tuberculosis sanatoriums, 5 to maternity hospitals, 3 to industrial units, 6 to eye, ear, nose, and throat, 8 to children's hospitals, 2 to orthopedic, 2 to isolation, 2 to convalescent units, 7 to hospital departments of institutions, and 3 to other hospitals.

Comparative data will be found in tables 1 and 2 as well as in the other statistical compilations, but reference should also be made to the preceding Hospital Number of THE JOURNAL, May 10, 1952. Outpatients and hospital births are not included in the admission totals reported in the present survey.

Average Daily Census

Comparative Totals
1951: 1,293,653
1952: 1,309,377

From 1935 to 1945 the average daily census of patients in hospitals increased from 875,510 to 1,405,247. Then, after a reduction to 1,217,154 in 1948, the average patient load again advanced, reaching 1,224,951 in 1949, 1,242,777 in 1950, and 1,293,653 in 1951. In the present survey a still further increase occurred, as evidenced by the report of 1,309,377, not including newborn infants. Of this number, 984,062 were constantly under treatment in governmental hospitals, whereas the average daily census in the nongovernmental group was 325,315. When compared with the corresponding totals of 973,072 and 320,581 reported in 1951, it will be noted that net increases occurred in both classifications. These gains were more pronounced in the governmental group, which can be credited with 75.2% of the total average census in all registered hospitals. In this section the state hospitals alone reported an average of 656,232, of which 606,636 represents the daily care of psychiatric patients. The federal hospitals listed 170,745, the county institutions 89,434, the municipal hospitals 57,964, and those operating under city-county control 9,687. In the nongovernmental division only minor changes occurred in relation to the previous year. However, it may be shown that the church hospitals and other nonprofit associations, with a total census of 291,309, carry 22.2% of the daily patient load, while the proprietary hospitals, with 34,006, have only 2.6%.

In the general hospitals the average census advanced from 470,692 to 475,193 and now represents 36.3% of all patients under treatment. These institutions also list 41.5% of the hospital beds and 93.8% of all admissions reported in 1952. The governmental general hospitals maintained a daily average of 199,953 as compared with 200,035 in 1951, and showed the following distribution in the various groups: federal 100,523, state 16,179, county 37,659, municipal 38,426, and city-county 7,166. The daily patient load in the nongovernmental general hospitals was 270,657 in 1951 and 275,240 in the present survey. Here the highest average was in the church hospitals and other nonprofit associations, which reported a combined total of 253,073, whereas the proprietary general hospitals listed 22,167.

Again the average census in the psychiatric hospitals is the highest that has been recorded in this field. The present total of 704,056, compared with 697,521 in 1951, represents 53.7% of the daily patient load in all registered hospitals. On reference to table E it will be found that the psychiatric service is mainly under governmental control, inasmuch as the hospitals in this division listed an average of 688,119 while the nongovernmental group reported only 15,937. This total, it should be noted, gives a clear indication of the long periods of hospitalization required in the psychiatric institutions, which received only 1.6% of all patients admitted in 1952.

In the tuberculosis division the daily average advanced from 73,588 to 75,253 and now represents 5.7% of the total hospital census. Here, again, the major responsibility for hospitalization falls on the governmental group, which reported a patient load of 67,487 as compared with 7,766 in the nongovernmental classification. Other groups shown in table D have a combined average census of 54,875, or 4.2% of the total patient load in all registered hospitals.

The average daily census of 1,309,377 reported in 1952 represents the tremendous total of 479,231,982 patient days, including 360,166,692 in the governmental division and 119,065,290 in the nongovernmental group. When classified by type of service the general hospitals show 173,920,638 days of patient care, the psychiatric institutions 257,684,496, the tuberculosis hospitals 27,542,598, and other units 20,084,250.

Percentage of Beds Occupied

Comparative Totals
1951: 84.5
1952: 84.9

The average bed occupancy in the hospitals registered by the American Medical Association increased in the last year from 84.5 to 84.9%. As shown in table H the governmental hospitals reported 89.4% as compared with 88.6 in 1951, whereas the nongovernmental group had a rate of 73.6% in relation to the previous total of

74.1. In the governmental section the highest rate, 94.9%, was in the state hospitals that give their major service to psychiatric care. The county hospitals reported an average occupancy of 80.1%, the municipal institutions 79.9, the city-county hospitals 77.2, and the federal group 80.7. Comparative totals for 1950 and 1951 will be found in table H. In the church and other nonprofit hospitals the combined occupancy rate was reduced from 75.3 to 74.5, whereas the individual and partnership group advanced from 60.1 to 60.9. The hospitals operating as corporations unrestricted as to profit showed an average of 72.6% as compared with 72.1 in 1951.

The classification of hospitals by type of service shows a greater variation in the percentage of beds occupied. Here the range is from 40.9% in the isolation hospitals to 96.0 in the psychiatric institutions where the service is generally characterized by long periods of hospitalization. For these groups the comparative totals of the previous year were 53.6 and 95.8%. In the tuberculosis field the average increased from 83.3 to 84.0%, while in the general hospitals an advance from 73.5 to 74.1% was observed. In this connection, it should be noted that an average bed occupancy of 80 to 85% is generally considered the maximum limit of operating efficiency in general hospitals. For practical purposes, therefore, a general hospital reporting 80 to 85% occupancy may be regarded as operating at capacity level.

TABLE H.—*Percentage of Beds Occupied*

	1950	1951	1952
According to Ownership or Control:			
Federal	77.8	77.3	80.7
State	95.1	94.5	94.9
County	83.6	82.8	80.1
City	82.9	78.6	79.9
City-county	78.4	78.2	77.2
Total governmental	89.8	88.6	89.4
Church	76.6	76.3	75.6
Other nonprofit associations	74.5	74.6	73.7
Total nonprofit	75.4	75.3	74.5
Individual and partnership	60.0	60.1	60.9
Corporations (profit unrestricted)	70.7	72.1	72.6
Total proprietary	65.2	65.8	66.6
Total nongovernmental	74.1	74.1	73.6
According to Type of Service:			
General	73.7	73.5	74.1
Nervous and mental	96.6	95.8	96.0
Tuberculosis	84.4	83.3	84.0
Maternity	65.1	63.8	60.8
Industrial	67.9	66.6	66.9
Eye, ear, nose and throat	57.9	57.9	56.9
Children's	66.9	67.0	67.7
Orthopedic	79.4	77.7	73.2
Isolation	47.2	53.6	40.9
Convalescent and rest	70.6	71.4	73.3
Hospital departments of institutions	63.7	65.8	66.8
All other hospitals	87.3	92.0	80.9
Total all hospitals	85.3	84.5	84.9

Average Length of Stay

Comparative Totals	1951	1952
Governmental General Hospitals	17.0 days	16.4 days
Nongovernmental General Hospitals	7.7 days	7.5 days
All General Hospitals	10.1 days	9.8 days

In the annual survey of 1952 the general hospitals reported 17,760,057 admissions and 173,920,638 patient days. This represents an average length of stay per patient of 9.8 days as compared with 10.1 in 1951. It will be noted that the average stay of individual patients is more than twice as long in the governmental group, which listed 16.4 days, while the nongovernmental hospitals showed 7.5. The federal general hospitals reported 26.2 days, the state group 14.1, the county hospitals 11.9, the municipal institutions 11.7, and the city-county general hospitals 9.0. The shorter period of hospitalization in the nongovernmental division is clearly illustrated in the report of only 5.7 days in the proprietary group and 7.7 in the church and other nonprofit general hospitals.

TABLE J.—*Average Length of Stay Per Patient in General Hospitals, 1950, 1951 and 1952*

	1950	1951	1952
According to Ownership or Control:			
Federal	26.5 days	25.5 days	26.2 days
State	15.0 days	14.6 days	14.1 days
County	13.9 days	13.6 days	11.9 days
City	12.6 days	12.4 days	11.7 days
City-county	11.3 days	10.4 days	9.0 days
All governmental general	16.9 days	17.0 days	16.4 days
Church	8.0 days	7.9 days	7.7 days
Other nonprofit associations	8.2 days	8.0 days	7.8 days
All nonprofit general	8.1 days	8.0 days	7.7 days
Individual and partnership	5.4 days	5.3 days	5.3 days
Corporations (profit unrestricted)	6.5 days	6.3 days	6.2 days
All proprietary general	5.9 days	5.8 days	5.7 days
All nongovernmental general	7.9 days	7.7 days	7.5 days
All general hospitals	10.0 days	10.1 days	9.8 days

The present average of 9.8 days for all general hospitals may be compared with 10.1 in 1951, 10.0 in 1950, 10.1 in 1949, 10.5 in 1948, 11.4 in 1947, 12.9 in 1946, and 15.9 in 1945. Since 1945, therefore, the length of stay has been reduced by 6.1 days. This reduction, if applied to the present total of 17,760,057 admissions in the general hospital group, would indicate an actual saving of 108,336,347 days of hospital care.

Births in Hospitals

Comparative Totals
1951: 2,999,371
1952: 3,170,495

The present total of 3,170,495 births sets a new record in the hospital field, as it exceeds for the first time the 3 million mark. Reference to table K will show the tremendous increase that has occurred in the utilization of hospital facilities for maternity care. The number of births recorded in the registered hospitals in 1929 was 621,898. The million mark was exceeded in 1938 and the 2 million total in 1946. The following year the registered hospitals listed 2,837,139 births and subsequently showed 2,794,281 in 1948, 2,820,791 in 1949, and 2,815,806 in 1950. In the present survey the governmental group reported 634,363, or 20% of the hospital births, whereas the nongovernmental units had 2,536,132, or 80%. Included in the latter are 242,852 births in the proprietary institutions and 2,293,280 in the church and other nonprofit hospitals. The following distribution may be observed in the governmental classification: federal hospitals 117,432 births, state hospitals 63,763, county 196,826, municipal 203,370, and city-county 52,972.

In the general hospitals, the number of births increased from 2,923,509 to 3,090,807. This total, which represents 97.5% of all births in the registered hospitals, includes 620,982 in the governmental general hospitals and 2,469,825 in the corresponding nongovernmental group. The maternity hospitals reported 72,265 as compared with 71,343 in the previous year, while the remaining institutions shown in table D listed only 7,423. From this report it may also be noted that the registered hospitals reported 80% of the estimated 3,910,000 births in the United States in 1952.

TABLE K.—*Births in Hospitals According to Ownership or Control and According to Type of Service*

	1929	1950	1951	1952
According to Ownership and Control:				
Federal	2,296	61,938	85,935	117,432
State	9,125	62,918	68,477	63,763
County	17,527	151,139	170,425	196,826
City	45,787	182,343	196,733	203,370
City-county	8,806	43,814	50,722	52,972
Total governmental	83,541	502,152	572,292	634,363
Church	209,726	949,955	983,760	1,034,263
Fraternal	1,730	.....	.....	.....
Nonprofit associations	.....	1,126,353	1,197,648	1,259,017
Industrial	4,327	.....	.....	.....
Independent	283,136	.....	.....	.....
Total nonprofit	.....	2,076,308	2,181,408	2,293,280
Individual and partnership	39,436	128,101	134,539	129,838
Corporations (profit unrestricted)	.....	109,245	111,132	113,014
Total proprietary	.....	237,346	245,671	242,852
Total nongovernmental	538,355	2,313,654	2,427,079	2,536,132
According to Type of Service:				
General	566,177	2,739,212	2,923,509	3,090,807
Maternity	53,019	70,944	71,343	72,265
Children's	862	.....	2	2
Hospital departments of institutions	277	341	238	143
All other hospitals	1,561	5,309	4,279	7,278
Total births in all hospitals	621,898	2,815,806	2,999,371	3,170,495

TABLE L.—*Hospital Births Classified by States*

	Births		Births
Alabama	45,957	Nebraska	29,940
Arizona	17,902	Nevada	3,451
Arkansas	25,311	New Hampshire	11,077
California	224,629	New Jersey	99,771
Colorado	33,521	New Mexico	12,845
Connecticut	45,748	New York	304,927
Delaware	7,874	North Carolina	80,290
District of Columbia	32,504	North Dakota	16,021
Florida	53,643	Ohio	188,326
Georgia	59,370	Oklahoma	36,575
Idaho	14,615	Oregon	34,989
Illinois	189,245	Pennsylvania	219,811
Indiana	96,079	Rhode Island	18,482
Iowa	51,329	South Carolina	35,676
Kansas	41,293	South Dakota	15,181
Kentucky	51,659	Tennessee	56,349
Louisiana	59,851	Texas	168,725
Maine	16,095	Utah	20,433
Maryland	49,611	Vermont	7,913
Massachusetts	98,382	Virginia	63,876
Michigan	154,865	Washington	58,286
Minnesota	75,298	West Virginia	36,675
Mississippi	26,200	Wisconsin	84,720
Missouri	74,115	Wyoming	6,760
Montana	14,300	Total	3,170,495

Professional Nursing Service

Comparative Totals

Graduate Nurses	Student Nurses
1951: 216,047	1951: 103,527
1952: 225,613	1952: 100,595

Information on professional nursing personnel and schools of nursing education is presented in tables M 1, M 2, and M 3. These compilations for 1952 show increased nursing personnel in practically all divisions as compared with the previous year. The number of graduate nurses employed by the hospitals registered by the American Medical Association has now reached a total of 225,613 exclusive of 31,013 assigned to private duty. Last year the corresponding totals were 216,047 and 31,807 respectively. Table M 1 lists 10,166 administrative nurses, 6,259 full-time instructors, 22,997 supervisors and assistant supervisors, 35,839 head nurses and assistant head nurses, 112,324 full-time general duty nurses, 29,721 part-time general duty nurses, and 8,307 other graduate nurses in unclassified positions. From these studies it is apparent that 142,045, or 62.9% of the professional nurses, are utilized for general bedside care, while 75,261, or 33.3%, serve in administrative, supervisory, or educational capacities. Only a small number, 8,307, or 3.7%, were not classified in the hospital reports. In table M 2 it may be observed that the federal hospitals employ 23,745, or 10.5%, of the graduate nursing personnel and the other governmental hospitals 46,733, or 20.7%. The greatest number, however, will be found in the nongovernmental group, which reported 155,135, or 68.7%. The general hospitals, with 17,760,057 admissions in 1952, listed 197,056 graduate nurses as compared with 189,122 in the previous survey. As shown in table M 3 the general hospitals also employed 29,857 private duty nurses out of the total of 31,013.

The present total of 1,079 accredited schools of professional nursing is 27 less than the number reported in 1951. Nearly all are sponsored by general hospitals as shown in table M 3, but on the basis of control, table M 2, it will be found that 144 are listed in the governmental group and 935 in the nongovernmental classification. In the Hospital Register two symbols are employed to differentiate the institutions that conduct schools and those that supply training on an affiliated basis. The diamond symbol (◊) is applied to accredited schools of professional nursing operated by hospitals individually or under joint hospital and college or university sponsorship, while the circular symbol (⊙) refers to hospitals that provide acceptable supplementary training in a limited field as, for example, pediatrics, psychiatry, tuberculosis, or contagious diseases. In the present survey the approved schools listed 100,595 students as compared with 103,527 in 1951. Of this number 15,613 are receiving their training in governmental institutions, whereas 84,982 are enrolled in nongovernmental hospitals. The affiliated hospital programs, 248 in all, listed 10,163 students. The Committee on Careers in Nursing has indicated that 42,103 new students were admitted last year in the accredited professional nursing schools. While this represents an increase over the previous year, a further intensification of the recruitment program will be made in 1953 and will emphasize career opportunities in both the practical and the professional nursing fields. The work of this committee is supported by the national nursing organizations, the American Hospital Association, the American Medical Association, the United Community Defense Services, the National Foundation for Infantile Paralysis, and other groups.

Practical Nurses and Auxiliary Personnel

The role of the practical nurse in hospital service is steadily increasing as greater emphasis is being placed on the utilization of practical nursing personnel and the standardization of training programs in this field. The further training and utilization of practical nurses was officially recommended by the Committee on Nursing of the American Medical Association, whose report was published in THE JOURNAL, July 3, 1948, pages 878-879. In the following year the registered hospitals reported 242 schools of practical nursing, 318 in 1950, 334 in 1951, and 310 in the present survey of 1952. Of these schools 100 are in governmental hospitals and 210 in the nongovernmental group. When classified by type of service, 257 are found in general hospitals, 23 in psychiatric institutions, 9 in tuberculosis sanatoriums, and 21 in other hospitals. The present number of students, 5,712, may be compared with 6,711 in 1951, 5,971 in 1950, and 5,050 in 1949. The governmental hospitals list 2,207 students, the nongovernmental institutions 3,505. It may also be noted that the general hospitals have 4,186 students, the psychiatric institutions 863, the tuberculosis sanatoriums 180, and other hospitals 483.

Attention is invited to tables N 1, N 2, and N 3, which give information on practical nurses and auxiliary personnel classified by states, hospital control, and type of service. Here it will be found that 48,941 practical nurses were reported in 1952, 135,931 attendants, 90,863 nurses' aides, 25,858 orderlies, and 27,483 ward maids. The corresponding totals the previous year were 40,816, 127,161, 76,091, 26,771, and 26,627 respectively. In table N 1 it is shown that schools of practical nursing are now represented in all but five states.

TABLE M 1.—PROFESSIONAL NURSING PERSONNEL AND SCHOOLS OF NURSING EDUCATION (Classified by States)

State	Student Nurses	Accredited Schools of Nursing	Schools Offering Affiliated Courses Only: Schools	Schools Offering Affiliated Courses Only: Students	Administrative Nursing Personnel	Full Time Instructors	Supervisors and Asst. Supervisors	Head Nurses and Asst. Head Nurses	General Duty Nurses: Full Time	General Duty Nurses: Part Time	Nurses Not Classified	Total Graduate Nurses	Private Duty Nurses
Alabama	1,012	13	4	59	159	67	327	369	1,377	136	97	2,532	239
Arizona	431	4	..	...	70	22	97	138	813	48	35	1,223	130
Arkansas	601	6	1	50	88	25	198	234	572	39	70	1,226	78
California	4,059	41	14	364	652	286	1,429	2,893	11,564	1,468	852	19,144	2,062
Colorado	834	13	4	58	135	89	237	425	1,370	425	107	2,788	279
Connecticut	2,120	17	5	224	140	132	397	697	2,222	872	129	4,599	830
Delaware	414	6	1	38	33	21	71	94	357	102	28	706	94
District of Columbia	623	6	2	107	72	64	227	517	1,385	347	138	2,750	346
Florida	1,064	15	4	43	183	58	442	653	2,203	129	225	3,893	637
Georgia	1,502	11	1	54	182	95	372	515	1,572	63	88	2,887	504
Idaho	358	7	2	44	63	26	103	122	340	150	15	819	44
Illinois	7,279	81	15	984	586	447	1,630	2,054	6,010	2,264	486	13,477	1,057
Indiana	2,283	24	7	137	213	183	514	713	2,211	823	157	4,764	437
Iowa	2,263	27	4	241	174	90	436	424	1,772	796	153	3,845	286
Kansas	1,616	27	..	...	170	79	387	442	1,119	347	106	2,650	250
Kentucky	1,131	12	5	72	152	71	278	446	1,407	228	44	2,626	293
Louisiana	1,154	15	3	228	146	75	340	534	1,418	155	135	2,803	462
Maine	721	7	2	34	84	39	159	245	685	174	75	1,461	262
Maryland	1,803	20	7	333	169	153	414	678	1,657	338	165	3,574	655
Massachusetts	5,361	51	16	740	436	309	1,228	2,041	4,934	1,597	671	11,186	1,630
Michigan	3,736	30	11	445	418	260	817	1,289	4,395	1,899	269	9,347	672
Minnesota	4,069	24	17	477	308	198	564	1,026	2,889	1,216	133	6,325	571
Mississippi	683	12	..	...	110	35	214	204	741	50	85	1,439	254
Missouri	2,656	27	6	212	245	153	598	706	2,085	565	135	4,487	561
Montana	662	11	2	100	81	37	127	156	470	197	51	1,119	95
Nebraska	1,145	12	3	107	133	69	222	297	862	348	70	2,001	178
Nevada	.....	..	..	...	16	1	28	29	235	21	27	357	58
New Hampshire	660	12	..	...	65	30	150	173	553	166	38	1,175	139
New Jersey	3,119	41	7	378	280	212	690	1,194	3,657	1,706	175	7,914	1,435
New Mexico	48	2	1	12	52	11	84	72	443	55	22	739	98
New York	10,532	94	23	1,696	1,017	754	2,627	5,644	13,933	3,795	1,013	28,753	5,164
North Carolina	2,410	38	6	170	258	139	532	700	2,262	224	157	4,272	619
North Dakota	920	10	..	...	76	35	131	123	384	127	17	893	154
Ohio	5,873	58	15	767	446	409	1,044	1,667	5,296	2,493	322	11,677	1,457
Oklahoma	828	10	1	49	145	48	262	368	801	123	66	1,813	289
Oregon	845	7	3	80	124	60	214	339	1,289	344	158	2,528	273
Pennsylvania	11,267	108	22	1,016	588	635	1,741	2,429	9,672	1,911	481	17,457	2,997
Rhode Island	507	5	4	196	54	51	117	273	725	422	34	1,676	86
South Carolina	1,095	13	1	62	99	47	235	315	963	102	41	1,802	305
South Dakota	811	9	1	36	77	38	117	166	403	85	52	938	48
Tennessee	1,728	16	5	69	173	93	398	526	1,516	139	87	2,932	498
Texas	2,176	32	4	54	560	208	1,045	1,209	4,094	475	406	7,997	1,608
Utah	455	6	2	34	45	20	65	126	382	268	21	927	27
Vermont	326	6	..	...	45	24	78	97	389	125	22	780	84
Virginia	2,111	31	1	30	203	125	420	695	1,965	390	159	3,957	862
Washington	1,363	19	9	186	223	95	372	720	2,873	623	166	5,072	232
West Virginia	1,206	19	..	...	124	70	252	304	1,163	153	87	2,153	374
Wisconsin	2,735	24	7	267	258	120	625	716	2,705	1,138	210	5,672	385
Wyoming	.....	..	..	...	36	1	42	42	260	60	17	458	15
Totals	100,595	1,079	248	10,163	10,166	6,259	22,997	35,839	112,324	29,721	8,307	225,613	31,013

Laboratory Departments

Of the 6,665 registered hospitals included in the present survey, 5,670 reported laboratory departments, 913 gave a negative answer, and 82 did not reply. Included in the group maintaining active laboratory services are 374 federal hospitals, 476 state institutions, 563 county units, 303 municipal hospitals, 73 city-county institutions, 2,929 church and other nonprofit associations, and 952 proprietary hospitals. Laboratory departments are also located in 4,490 general hospitals, 407 psychiatric institutions, 355 tuberculosis sanatoriums, 28 maternity hospitals, 26 industrial units, 36 eye, ear, nose, and throat hospitals, 37 children's units, 56 orthopedic hospitals, 17 isolation hospitals, 29 con-

valescent units, 125 hospital departments of institutions, and 64 other hospitals. When classified by size it is found that hospitals of 25 beds and under reported 817 laboratory departments; those of 26 to 50 beds 1,251; 51 to 100 beds 1,234; 101 to 200 beds 1,063; 201 to 300 beds 473; and 301 beds and over, 832. The federal hospitals have 328 laboratories with physicians in charge, the other governmental institutions 936, the church hospitals and other nonprofit associations 2,385, and the proprietary institutions 617. The greatest number of physicians are associated with general hospitals, which listed 3,387 laboratory services under medical supervision as compared with 289 in psychiatric institutions, 259 in tuberculosis sanatoriums, and 331 in other hospitals.

Information obtained in the present survey indicates, also, that bacteriological laboratories are maintained in 3,447 hospitals, including 320 federal hospitals, 310 state institutions, 515 city and county hospitals, 1,941 church and other nonprofit associations, and 361 proprietary hospitals. When classified by type of service it is noted that 2,749 are located in general hospitals, 226 in mental institutions, 261 in tuberculosis sanatoriums, and 211 in other hospitals. On the basis of size it was found that hospitals with over 300 beds reported 718 bacteriological laboratories, those of 201 to 300 beds, 434; 101 to 200 beds, 887; 51 to 100 beds, 690; and 50 beds or less, 718. It was also reported that the bacteriological laboratories are operating under the following types of supervision: physician (M.D.) in charge, 2,471; director with Ph.D. degree 63, with M.A. or M.S. 53, with B.A. or B.S. 71; other or not specified 789. In 389 hospitals the bacteriological laboratory was listed as being separate from the clinical laboratory, whereas 2,990 indicated that a separate organization was not maintained.

TABLE M 2.—PROFESSIONAL NURSING PERSONNEL AND SCHOOLS OF NURSING EDUCATION
(Classified by Control)

Control	Student Nurses	Accredited Schools of Nursing	Schools Offering Affiliated Courses Only: Schools	Schools Offering Affiliated Courses Only: Students	Administrative Nursing Personnel	Full Time Instructors	Supervisors and Asst. Supervisors	Head Nurses and Asst. Head Nurses	General Duty Nurses: Full Time	General Duty Nurses: Part Time	Nurses Not Classified	Total Graduate Nurses	Private Duty Nurses
Governmental													
U. S. Army	.....	..	..	...	85	46	260	846	2,372	4	231	3,844	16
U. S. Air Force	.....	..	..	...	42	1	87	250	765	6	143	1,294	...
U. S. Navy	.....	..	..	...	51	14	225	819	962	...	330	2,401	...
U. S. Public Health Service	.....	..	1	30	48	2	59	154	685	10	41	999	2
Veterans Administration	.....	..	15	543	407	247	1,004	2,379	9,865	80	156	14,138	8
Indian Affairs	.....	..	..	...	68	3	6	32	389	4	1	503	...
Other Federal	120	2	1	28	13	13	66	251	209	6	8	566	...
Total Federal	120	2	17	601	714	326	1,707	4,731	15,247	110	910	23,745	26
State	5,159	47	93	4,204	750	517	2,172	4,089	6,120	580	403	14,631	575
County	3,185	30	23	985	865	193	1,582	2,366	6,955	1,509	481	13,951	839
City	5,941	51	21	889	645	460	1,452	2,296	8,130	1,875	496	15,354	1,208
City-county	1,208	14	3	64	118	85	310	424	1,498	247	115	2,797	245
Total other governmental	15,493	142	140	6,142	2,378	1,255	5,516	9,175	22,703	4,211	1,495	46,733	2,867
Total all governmental	15,613	144	157	6,743	3,092	1,581	7,223	13,906	37,950	4,321	2,405	70,478	2,893
Nongovernmental													
Church	44,339	475	26	1,004	2,261	2,258	6,282	8,300	26,620	8,489	2,156	56,366	9,988
Nonprofit associations	39,594	441	63	2,357	3,604	2,346	8,025	12,250	42,143	15,462	3,153	86,983	16,140
Individual and partnership	80	3	..	...	749	31	700	492	2,601	717	286	5,576	717
Corporations (profit unrestricted)	969	16	2	59	460	43	767	891	3,010	782	307	6,210	1,275
Total nongovernmental	84,982	935	91	3,420	7,074	4,678	15,774	21,933	74,374	25,400	5,902	155,135	28,120
Total all hospitals	100,595	1,079	248	10,163	10,166	6,259	22,997	35,839	112,324	29,721	8,307	225,613	31,013

TABLE M 3.—PROFESSIONAL NURSING PERSONNEL AND SCHOOLS OF NURSING EDUCATION
(Classified by Type of Service)

Type of Service	Student Nurses	Accredited Schools of Nursing	Schools Offering Affiliated Courses Only: Schools	Schools Offering Affiliated Courses Only: Students	Administrative Nursing Personnel	Full Time Instructors	Supervisors and Asst. Supervisors	Head Nurses and Asst. Head Nurses	General Duty Nurses: Full Time	General Duty Nurses: Part Time	Nurses Not Classified	Total Graduate Nurses	Private Duty Nurses
General	99,255	1,053	45	1,431	8,091	5,600	18,917	29,001	99,860	28,318	7,269	197,056	29,857
N & M	1,085	23	114	5,369	718	428	1,994	3,988	4,410	235	230	12,003	345
Tuberculosis	41	1	39	1,169	558	92	923	1,359	3,551	316	242	7,041	75
Maternity	.....	..	9	385	77	22	157	214	524	210	73	1,277	25
Industrial	.....	..	..	...	35	...	42	45	475	24	38	659	39
E. E. N. T.	.....	..	2	70	58	4	88	122	391	76	57	796	149
Children's	214	2	22	1,135	105	64	173	342	724	139	105	1,652	105
Orthopedic	.....	..	6	69	132	7	225	166	420	113	72	1,135	31
Isolation	.....	..	9	499	48	21	50	74	261	38	36	528	25
Convalescent and rest	.....	..	..	...	111	...	104	58	282	67	12	634	72
Institutions	.....	..	..	...	106	3	110	135	599	89	34	1,076	8
All other hospitals	.....	..	2	36	127	18	214	335	827	96	139	1,756	282
Total all hospitals	100,595	1,079	248	10,163	10,166	6,259	22,997	35,839	112,324	29,721	8,307	225,613	31,013

X-Ray Departments

X-ray departments were reported in 5,900 hospitals including 382 federal institutions, 485 state hospitals, 615 county institutions, 329 municipal hospitals, 77 city-county units, 2,986 church and other nonprofit associations, and 1,026 proprietary hospitals. With reference to type of service, however, the following distribution may be noted: general hospitals 4,728 x-ray departments, psychiatric institutions 368, tuberculosis

sanatoriums 400, maternity hospitals 21, industrial 31, eye, ear, nose, and throat 35, children's units 37, orthopedic 65, isolation 15, convalescent units 18, hospital departments of institutions 122, and other hospitals 60. A further analysis shows that hospitals of 25 beds and under have 960 x-ray departments; those of 26 to 50 beds, 1,317; 51 to 100 beds, 1,239; 101 to 200 beds, 1,069; 201 to 300 beds, 472; 301 beds and over, 843. The federal hospitals list 352 x-ray departments with physicians in charge, the other governmental institutions 1,070, the church and other nonprofit associations

TABLE N 1.—*Practical Nurses and Auxiliary Personnel (Classified by States)*

State	Schools of Practical Nursing	Practical Nurse Students	Practical Nurses Employed	Attendants	Nurses' Aides	Ward Maids	Orderlies
Alabama	6	86	537	1,688	1,440	562	529
Arizona	..	...	138	714	421	153	124
Arkansas	7	56	420	1,581	921	178	188
California	22	782	2,146	12,130	6,425	1,529	2,835
Colorado	9	202	498	1,967	1,111	204	194
Connecticut	2	46	236	1,888	1,089	494	519
Delaware	..	...	45	419	201	75	50
District of Columbia	3	95	274	2,365	712	481	177
Florida	4	61	1,207	1,394	1,495	486	788
Georgia	4	113	625	2,182	1,754	704	1,004
Idaho	17	181	237	299	196	88	28
Illinois	5	116	1,910	6,690	5,948	1,107	978
Indiana	1	19	651	2,361	2,936	654	377
Iowa	1	30	583	1,512	1,771	340	244
Kansas	2	46	296	1,620	2,507	301	219
Kentucky	4	51	858	1,894	1,503	370	448
Louisiana	4	106	4,922	1,455	1,488	594	494
Maine	1	35	177	8,606	293	206	48
Maryland	7	132	812	2,289	1,344	733	871
Massachusetts	12	246	613	7,005	1,757	1,700	1,013
Michigan	9	165	2,587	6,042	4,589	983	1,076
Minnesota	12	368	1,508	1,846	2,672	595	318
Mississippi	8	63	434	1,026	796	295	198
Missouri	5	73	1,154	3,403	2,622	618	593
Montana	4	38	164	370	546	118	61
Nebraska	..	...	355	1,212	1,176	261	122
Nevada	1	13	51	75	136	29	20
New Hampshire	1	9	172	349	171	130	88
New Jersey	1	8	1,126	3,646	2,062	1,063	938
New Mexico	4	85	171	322	481	96	72
New York	19	582	9,278	23,392	8,141	3,079	2,372
North Carolina	8	144	937	1,550	1,951	726	914
North Dakota	2	23	101	322	554	90	32
Ohio	10	207	1,180	5,733	7,612	1,646	956
Oklahoma	6	71	659	1,454	1,416	292	184
Oregon	3	25	503	995	1,143	207	83
Pennsylvania	9	189	1,754	7,002	4,602	1,632	1,657
Rhode Island	..	...	115	784	156	207	135
South Carolina	6	72	381	581	652	354	624
South Dakota	1	35	153	484	430	122	30
Tennessee	15	138	1,259	1,855	1,632	555	416
Texas	54	707	3,685	4,073	4,185	1,258	1,709
Utah	1	19	196	396	486	88	63
Vermont	1	26	123	325	137	65	28
Virginia	6	70	933	2,716	1,183	587	812
Washington	4	120	1,561	1,495	1,730	296	501
West Virginia	2	35	233	792	1,333	232	434
Wisconsin	7	74	958	3,218	2,672	859	266
Wyoming	..	...	25	354	285	41	28
Totals	310	5,712	48,941	135,931	90,863	27,483	25,858

2,611, and the proprietary hospitals 776. It can likewise be shown that x-ray departments are under medical supervision in 3,881 general hospitals, in 271 psychiatric institutions, in 314 tuberculosis sanatoriums, and in 343 other hospitals. While 5,900 hospitals reported x-ray departments, 694 answered "none," and 71 did not respond.

Outpatient Departments

In the present survey, 2,838 hospitals reported outpatient departments, 3,632 gave a negative response, and 195 did not answer this part of the questionnaire. From the reports submitted, however, the following distribution may be noted: federal hospitals 283 outpatient departments, state hospitals 350, county institutions 321, municipal hospitals 128, city-county units 35, church and other nonprofit associations 1,332, and proprietary hospitals 389. Outpatient departments were also reported in 1,907 general hospitals, 252 psychiatric institutions, 297 tuberculosis sanatoriums, 40 maternity hospitals, 31 industrial units, 28 eye, ear, nose, and throat hospitals, 27 children's units, 68 orthopedic hospitals, 9 isolation hospitals, 124 departments of institutions, 14 convalescent units, and 41 other hospitals. When classified by size the following listing can be made: hospitals of 25 beds and under, 347 outpatient departments; those of 26 to 50 beds, 519; 51 to 100 beds, 529; 101 to 200 beds, 561; 201 to 300 beds, 303; and 301 beds and over, 579. In the 1951 survey, 2,790 hospitals reported outpatient services, 3,614 answered "none," and 233 did not reply.

TABLE N 2.—*Practical Nurses and Auxiliary Personnel (Classified by Control)*

Control	Schools of Practical Nursing	Practical Nurse Students	Practical Nurses Employed	Attendants	Nurses' Aides	Ward Maids	Orderlies
Governmental							
U. S. Army	5	158	33	3,783	619	295	1,620
U. S. Air Force	2	19	71	803	135	60	822
U. S. Navy	..	...	52	398	154	187	1,541
U. S. Public Health Service	..	...	79	1,305	8	46	99
Veterans Administration	..	...	130	24,285	1,767	578	258
Indian Affairs	1	24	116	367	48	77	58
Other Federal	1	10	29	1,357	7	163	112
Total Federal	9	211	510	32,298	2,738	1,404	4,510
State	35	1,170	7,654	69,789	5,715	1,799	2,422
County	37	418	4,527	8,054	7,759	2,316	3,153
City	14	256	4,923	7,339	5,567	3,335	2,212
City-county	5	152	644	458	1,451	422	958
Total other governmental	91	1,996	17,748	85,640	20,492	7,872	8,745
Total all governmental	100	2,207	18,258	117,938	23,230	9,276	13,255
Nongovernmental							
Church	57	1,263	8,284	2,121	29,277	7,492	3,616
Nonprofit associations	107	1,888	15,160	14,083	33,079	8,672	7,569
Individual and partnership	30	182	4,323	525	2,488	1,074	608
Corporations (profit unrestricted)	16	172	2,916	1,264	2,789	969	820
Total nongovernmental	210	3,505	30,683	17,993	67,633	18,207	12,603
Total all hospitals	310	5,712	48,941	135,931	90,863	27,483	25,858

Medical Motion Pictures

At the request of the American Medical Association's Committee on Medical Motion Pictures, the following questions were included in the present annual survey to ascertain the extent to which motion picture films are being utilized in hospital educational programs: 1. Is a 16 mm. sound motion picture projector available for use when needed? 2. Do you use motion pictures in medical staff meetings? often; occasionally; not at all. Do you use motion pictures for nurses' training? often; occasionally; not at all. 3. Compare present use of motion pictures in your hospital with use five years ago: more; less; same.

In relation to the first question, 4,155, or 62% of all registered hospitals, indicated that 16 mm. sound motion picture projection equipment was available as needed, whereas 2,111 gave a negative answer and 399 did not reply. Of the institutions reporting sound equip-

ment 3,028 were general hospitals, 443 psychiatric institutions, 300 tuberculosis sanatoriums, 45 maternity hospitals, 6 industrial, 24 eye, ear, nose, and throat, 33 children's units, 78 orthopedic, 16 isolation, 50 convalescent, 74 departments of institutions, and 58 other hospitals. On the basis of control, the following distribution was noted: federal hospitals 335, state institutions 432, county 358, municipal 202, city-county 51, church hospitals 937, other nonprofit associations 1,355, individual and partnership hospitals 285, and corporations unrestricted as to profit 200. When classified by size it is found that sound equipment is available in 320 hospitals of 25 beds or less, 686 hospitals of 26 to 50 beds, 915 hospitals of 51 to 100 beds, 966 hospitals of 101 to 200 beds, 455 hospitals of 201 to 300 beds, and 813 hospitals of more than 300 beds.

As to the use of motion pictures in medical staff meetings, 813 hospitals indicated that such pictures were used often, 3,081 reported an occasional use, 1,899 did not employ this method, and 872 did not reply. When this same question was asked in relation to nurses' training the following answers were received: used often, 1,326 hospitals; occasionally, 1,417; not at all, 1,690; and no report, 2,232. Replying to the third question, 3,109 hospitals stated that motion pictures were now being used more frequently than they were five years ago, 79 indicated a less frequent use, 1,093 reported no change, and 2,384 did not respond.

TABLE N 3.—*Practical Nurses and Auxiliary Personnel (Classified by Type of Service)*

Type of Service	Schools of Practical Nursing	Practical Nurse Students	Practical Nurses Employed	Attendants	Nurses' Aides	Ward Maids	Orderlies
General	257	4,186	37,706	41,787	79,558	22,467	21,429
N & M	23	863	3,096	84,750	2,498	1,492	783
Tuberculosis	9	180	4,034	4,626	4,581	1,528	1,686
Maternity	4	115	341	6	505	258	15
Industrial	..	...	76	74	143	140	207
E. E. N. T.	..	...	217	8	265	72	131
Children's	5	75	178	254	699	220	53
Orthopedic	1	9	463	494	894	259	206
Isolation	..	...	161	271	43	276	35
Conv. and rest	2	34	604	149	400	151	83
Institutions	4	41	854	1,182	418	113	653
All other hospitals	5	209	1,211	2,330	859	507	577
Total all hospitals	310	5,712	48,941	135,931	90,863	27,483	25,858

In reference to the employment of clinical photographers, the hospitals listed 551 full-time and 227 part-time as compared with 294 and 168 in 1946.

The data obtained in the present survey will be referred to the American Medical Association's Committee on Medical Motion Pictures for further analysis and study. A previous report on medical motion pictures was published in THE JOURNAL, May 7, 1949.

General Practice Sections

A Section on the General Practice of Medicine was established by the American Medical Association in 1945 and in the following year the House of Delegates recommended that appointments to general practice sections in hospitals be extended in accordance with the merits and training of individual physicians. This policy was further emphasized in 1947, when the Council on Medical Education and Hospitals stated that "hospital staff appointments should depend on the qualifications of physicians to render proper care to hospitalized patients, as judged by the professional staff of the hospital, and not on certification or special society membership."

The annual hospital surveys carried out in the last three years have included the following questions: 1. Does staff organization include a department of General Practice? 2. Is it modeled after the Manual of the American Academy of General Practice? 3. Are staff privileges in specialty divisions open to qualified general practitioners? When the information requested in question 1 was analyzed in relation to the general hospital field it was found that 2,292 hospitals are now maintaining general practice sections as compared with 1,660 in 1951 and 1,654 in 1950. Included in the present total, which represents 46% of all general hospitals, are 62 federal general hospitals, 72 state institutions, 213 county hospitals, 124 municipal, 23 city-county, 520 church hospitals, 764 other nonprofit associations, 362 individual and partnership hospitals, and 152 corporations unrestricted as to profit. When classified by size the hospitals of 25 beds and under list 459 general practice sections; those of 26 to 50 beds, 584; 51 to 100 beds, 504; 101 to 200 beds, 425; 201 to 300 beds, 174; and 301 beds and over 146. Comparative totals from previous surveys will be found in THE JOURNAL, May 10, 1952, and May 12, 1951.

The present report indicates further that 1,640 hospitals have modeled their staff organization in accordance with the Manual on General Practice Departments in Hospitals prepared by the American Academy of General Practice. This may be compared with the previous listing of 1,202 general hospitals in 1951 and 1,075 in 1950. It was likewise reported that 2,984 hospitals have granted qualified general practitioners additional staff privileges in specialty divisions. In 1951 the corresponding total was 1,358 and in the previous year, 1,333. General practice sections are reported in all states and the District of Columbia, but the number varies from 4 in Vermont to 243 in Texas. It is also of interest to note that 117 hospitals are currently approved by the American Medical Association for residency training in general practice.

Standard Nomenclature

Reports obtained in the present survey indicate that 4,937 or 74% of the registered hospitals are now utilizing the Standard Nomenclature of Diseases and Operations. These may be compared with 500 hospitals in 1935, two years after the first official edition of the Standard Nomenclature of Disease was published, and 1,014 in 1942, when the operative index was added. The use of the standard classification continued to spread in the following years, as evidenced by the listing of 1,660 hospitals in 1943, 4,457 in 1950, and 4,748 in 1951. Included in the present total of 4,937 hospitals are 338 federal institutions, 429 state hospitals, 476 county units, 252 municipal hospitals, 63 city-county institutions, 938 church hospitals, 1,609 other nonprofit associations, 569 individual and partnership hospitals,

and 263 corporations unrestricted as to profit. When classified by type of service the following distribution may be noted: general hospitals 3,746, psychiatric 441, tuberculosis 303, maternity 43, industrial 22, eye, ear, nose, and throat 40, children's units 34, orthopedic 69, isolation 19, convalescent 51, hospital departments of institutions 115, and other hospitals 54. In the present survey, 1,024 hospitals indicated that they do not follow the Standard Nomenclature, while 704 did not reply.

The Standard Nomenclature of Diseases and Operations has been officially endorsed by the American Medical Association, the American Hospital Association, the American College of Surgeons, and many other medical and surgical societies. As it is highly desirable that a uniform classification be achieved, it is strongly urged that the hospitals that are not included in the above group give serious consideration to the adoption of the Standard Nomenclature, which is suitable for universal use.

Technical Personnel in Hospitals

Information on technical personnel was published in THE JOURNAL in 1937 and thereafter each year from 1942 to 1947. As continuing shortages have been reported it seemed desirable that further studies be made in relation to the present supply of technical workers in the hospital field. Accordingly, all registered hospitals were asked to supply information with reference to the employment of medical technologists, x-ray technicians, physical therapists, occupational therapists, and medical record librarians. Reports on the number of dietitians, clinical photographers, and pharmacists were also requested. The classification of technical personnel by states, control, type of hospital service, and hospital size is shown in tables O 1, O 2, O 3 and O 4. Here it will be found that 23,822 technical laboratory workers are now employed, including 2,449 on part-time assignments. Of this number 8,612 were classified as medical technologists registered by the American Society of Clinical Pathologists. It was also reported that 11,199 x-ray technicians are serving full-time and 1,213 part-time, with the further indication that 5,046 are registered in this group. Physical therapy departments listed 4,176 full-time and 531 part-time workers, of whom 2,856 were designated as registered therapists. Similarly in occupational therapy there were 3,623 full-time and 330 part-time therapists engaged in hospital service, including 1,847 classified as registered personnel. The medical record division reported 5,510 full-time and 657 part-time record librarians, as well as 10,546 other medical record workers including 1,210 on part-time assignments. In this field 1,966 were designated by the reporting hospitals as registered medical record librarians. The hospitals also reported 8,368 full-time and 499 part-time dietitians, 551 full-time and 227 part-time

TABLE O 1.—TECHNICAL PERSONNEL IN HOSPITALS (Classified by States)

State	Medical Technologists		X-Ray Technicians		Physical Therapists		Occupational Therapists		Medical Record Librarians		Other Medical Record Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Alabama	271	32	158	19	43	2	35	3	96	7	99	6
Arizona	89	21	56	18	21	..	8	2	28	10	42	5
Arkansas	158	35	124	16	20	3	34	3	54	9	52	13
California	1,508	188	877	96	474	40	248	29	358	31	952	69
Colorado	274	37	148	22	85	6	80	13	69	4	149	19
Connecticut	371	20	200	2	82	10	94	6	85	1	200	30
Delaware	48	6	25	..	15	..	7	3	15	2	29	6
District of Columbia	233	16	90	4	62	5	41	3	42	2	82	9
Florida	395	24	197	11	80	7	27	4	113	7	121	10
Georgia	317	35	178	19	63	2	38	2	92	9	190	4
Idaho	57	17	46	19	10	..	23	1	17	8	13	5
Illinois	1,444	167	779	65	269	23	286	17	313	33	507	110
Indiana	495	80	271	34	87	7	84	3	120	11	202	36
Iowa	246	38	179	15	66	13	74	5	103	11	77	13
Kansas	301	53	162	29	65	8	105	6	86	24	88	21
Kentucky	279	51	174	19	52	9	42	3	100	13	128	19
Louisiana	353	59	180	19	53	5	21	..	76	11	207	14
Maine	102	12	53	11	11	4	14	1	37	3	25	4
Maryland	393	35	150	18	49	13	69	12	70	6	343	38
Massachusetts	1,047	75	489	26	164	18	207	15	303	22	525	80
Michigan	902	94	474	52	158	19	157	12	208	39	387	41
Minnesota	466	77	236	46	50	13	51	8	103	27	147	35
Mississippi	146	15	97	11	26	3	46	..	60	13	51	2
Missouri	525	82	269	31	87	8	57	6	135	20	156	61
Montana	85	18	52	15	15	5	9	..	37	9	20	3
Nebraska	173	46	111	16	32	9	27	1	58	8	68	23
Nevada	22	8	13	4	9	1	2	..	9	4	14	5
New Hampshire	93	12	49	9	15	..	13	..	39	..	30	6
New Jersey	599	29	315	16	122	23	143	9	180	17	208	31
New Mexico	77	7	46	4	14	1	16	..	34	1	26	7
New York	2,802	190	1,245	91	596	80	598	46	539	57	1,285	152
North Carolina	472	31	240	19	77	11	41	4	167	6	153	9
North Dakota	62	21	52	9	5	3	6	..	28	5	14	10
Ohio	1,006	172	520	90	151	14	147	17	254	26	474	77
Oklahoma	211	33	114	16	35	7	23	6	81	8	78	14
Oregon	170	40	109	28	39	7	21	4	49	11	69	6
Pennsylvania	1,446	127	728	43	251	45	242	26	337	36	617	50
Rhode Island	133	7	61	1	19	5	28	3	26	1	104	7
South Carolina	186	13	102	8	23	3	8	5	60	5	47	2
South Dakota	99	13	56	17	27	7	9	1	38	10	15	9
Tennessee	406	63	196	16	72	26	38	4	92	15	108	17
Texas	1,162	146	616	78	206	12	124	8	312	45	410	49
Utah	96	25	39	7	20	6	15	1	22	7	23	9
Vermont	61	15	34	14	9	1	12	..	30	..	16	4
Virginia	451	37	222	22	103	6	78	6	112	10	269	25
Washington	386	36	190	35	86	16	56	4	101	14	197	17
West Virginia	235	19	134	12	37	7	18	14	84	7	88	9
Wisconsin	471	58	308	40	99	18	90	14	123	29	155	18
Wyoming	49	5	35	3	22	..	11	..	15	3	66	1
Totals	21,373	2,449	11,199	1,213	4,176	531	3,623	330	5,510	657	9,336	1,210

clinical photographers and 3,785 full-time and 575 part-time pharmacists. It is of further interest to note that the governmental hospitals employ 8,046 medical technologists and other laboratory workers, 4,161 x-ray technicians, 2,047 physical therapists, 3,013 occupational therapists, 1,571 medical record librarians, 5,049 other medical record personnel, 3,193 dietitians, 359 clinical photographers, and 1,697 pharmacists. The macists. Further reference should be made to tables O 1, O 2 and O 3, which give more detailed information on the distribution of technical personnel in hospitals.

Schools of Medical Technology

Twenty years ago the American Society of Clinical Pathologists requested the Council on Medical Education and Hospitals to aid in the study and evaluation of

TABLE O 2.—TECHNICAL PERSONNEL IN HOSPITALS (Classified by Control)

Control	Medical Technologists		X-Ray Technicians		Physical Therapists		Occupational Therapists		Medical Record Librarians		Other Medical Record Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
According to Ownership or Control:												
Federal	3,200	35	1,526	14	1,100	6	834	15	250	20	2,137	26
State	1,482	125	725	66	485	21	1,690	36	400	27	1,408	94
County	1,174	157	732	134	165	27	227	43	417	57	653	62
City	1,467	112	723	80	189	22	144	4	289	22	493	79
City-county	263	31	145	16	27	5	16	4	80	9	86	11
Total governmental	7,586	460	3,851	310	1,966	81	2,911	102	1,436	135	4,777	272
Church	4,608	756	2,647	277	729	155	109	46	1,601	218	1,432	374
Nonprofit associations	7,956	991	3,890	480	1,335	254	476	133	1,996	209	2,723	497
Individual and partnership	617	146	445	94	69	28	38	18	244	60	231	45
Corporations (profit unrestricted)	576	96	366	52	77	13	89	31	233	35	173	22
Total nongovernmental	13,787	1,989	7,348	903	2,210	450	712	228	4,074	522	4,559	938
Total all hospitals	21,373	2,449	11,199	1,213	4,176	531	3,623	330	5,510	657	9,336	1,210

TABLE O 3.—TECHNICAL PERSONNEL IN HOSPITALS (Classified by Type of Service)

Type of Service	Medical Technologists		X-Ray Technicians		Physical Therapists		Occupational Therapists		Medical Record Librarians		Other Medical Record Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
According to Type of Service:												
General	18,735	2,087	9,916	990	2,985	413	969	121	4,663	518	7,163	1,027
N & M	914	85	427	39	531	25	2,054	96	324	43	1,342	52
Tuberculosis	764	107	458	90	84	11	346	54	214	34	390	52
Maternity	76	16	18	2	5	2	9	3	42	7	22	9
Industrial	66	13	51	5	14	3	1	1	22	2	24	3
E.E.N.T.	63	11	31	4	4	..	2	..	28	2	31	10
Children's	227	32	63	12	74	7	22	3	58	4	91	22
Orthopedic	55	29	50	24	265	22	97	10	53	16	57	5
Isolation	41	2	9	3	6	13	4	..	7	3	6	2
Convalescent and rest	21	14	9	3	43	16	25	19	10	11	8	6
Hospital departments of institutions	137	36	77	25	56	5	31	4	35	8	96	20
All other hospitals	274	17	90	16	109	18	63	19	54	9	106	2
Total all hospitals	21,373	2,449	11,199	1,213	4,176	531	3,623	330	5,510	657	9,336	1,210

TABLE O 4.—TECHNICAL PERSONNEL IN HOSPITALS (Classified by Size)

Bed Capacity	Medical Technologists		X-Ray Technicians		Physical Therapists		Occupational Therapists		Medical Record Librarians		Other Medical Record Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
25 and under	590	181	410	153	30	21	16	22	198	78	167	61
26-50	1,322	388	977	319	164	75	82	53	629	177	361	138
51-100	2,402	432	1,606	302	341	94	229	65	1,103	163	628	154
101-200	4,448	591	2,581	238	709	144	249	60	1,498	139	1,486	238
201-300	3,741	381	1,792	81	654	94	199	40	822	43	1,510	202
301 and over	8,870	476	3,833	120	2,278	103	2,848	90	1,260	57	5,184	417
Total all hospitals	21,373	2,449	11,199	1,213	4,176	531	3,623	330	5,510	657	9,336	1,210

corresponding totals of full-time and part-time personnel in the nongovernmental group are represented as follows: laboratory personnel 15,776, x-ray technicians 8,251, physical therapists 2,660, occupational therapists 940, medical record librarians 4,596, other medical record personnel 5,497, dietitians 5,674, clinical photographers 419, and ph rmacists 2,663. The general hospitals alone employ 20,822 laboratory workers, 10,906 x-ray technicians, 3,398 physical therapists, 1,090 occupational therapists, 5,181 medical record librarians, 8,190 other medical record personnel, 7,200 dietitians, 572 clinical photographers, and 3,657 pharlaboratory training programs. This function was originally carried out by the American Society of Clinical Pathologists and its Board of Registry, established in 1928. After inspections had been completed and standards established in 1936, the Council published a list of 96 approved schools, which have since increased to a total of 538. Under the present standards training programs may be established in approved medical schools, hospitals, or state health laboratories affiliated with hospital services. The entrance requirements are two years of accredited college training, including specified courses in chemistry and biology.

To aid the Council in the inspection, evaluation and approval of schools in this field, a Board of Schools of Medical Technology was established by the American Society of Clinical Pathologists late in 1949. After a questionnaire survey by the newly established Board, in cooperation with the Council, the American Society of Clinical Pathologists in October, 1951, authorized the Board of Schools of Medical Technology to inaugurate an inspection program to cover all the approved medical technology schools. The survey, carried out by volunteer regional inspectors, is now practically completed. Inspection reports are reviewed by the Board of Schools of Medical Technology in cooperation with the Council, which assumes final responsibility as to approval or disapproval of individual training programs. The board also assists the Council in the evaluation of new applications.

The 538 schools now approved represent an increase of 42 over last year's total of 496. A comparison of the 538 schools currently meeting the standards of the Council with the 96 courses originally approved in 1936 illustrates the rapid advances that have been made in a 20 year period to educate students for the all-important duties of assisting in the clinical laboratories of our hospitals. A total of 2,261 students are now in training in 470 approved schools; the remaining 68 schools failed to report students in 1952 because, in part, of the establishment of new programs, reorganization of courses, or the failure of applicants to satisfy entrance requirements. The total student capacity in all hospital classes has been reported as 4,116.

The number of graduates completing the course of study in 1952 outlined by 435 schools was 2,063, as compared with 2,220 in 1951. The remaining 103 schools advised that no students had been graduated, many stating, however, that it was anticipated the courses would be in full operation during the ensuing year. In the past 12 month period, 53 new schools were approved and 11 programs discontinued.

Students meeting the minimum entrance requirements of two years of college are accepted in 416 schools; 80 schools specify three years of preclinical training and 41 a degree. The remaining course is based on a requirement of two and one-half years of college.

Each succeeding year additional college affiliations are reported by the approved schools. The current revision of the medical technology list indicates that 317 hospitals have established college or university affiliation, the majority reporting that college credit is granted during the period of hospital training. The corresponding figure for last year was 282. Basic sciences and the regular academic requirements occupy the first three years in college, the fourth year being given over to instruction and practice training in hospital laboratories with which the educational institutions are affiliated. This training, as a rule, leads to a degree of bachelor of science in medical technology.

No state in the Union is without at least one approved course in medical technology. Pennsylvania has 46 schools meeting the present standards of the Council, Ohio ranks next with 43 schools, followed by Michigan with 31, New York with 29, Illinois with 27 and Texas with 25. Nineteen new applications are currently under consideration by the Board of Schools of Medical Technology and by the Council.

The length of training has been reported as 12 months by 473 schools. This is the minimum requirement outlined in the Council's Essentials, the course to include biochemistry, hematology, bacteriology, parasitology, histology, serology, urinalysis, basal metabolism, and miscellaneous clinical microscopy. In 65 schools the length of training is 12 to 24 months.

Application for approval of a school for medical technologists should be made to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10, Ill. Forms will be supplied for this purpose on request. They should be completed by the hospital pathologist in cooperation with the administrator of the institution requesting approval. Inquiries regarding the registration of qualified medical technologists should be addressed to the Registry of Medical Technologists, 700 South Council Street, Muncie, Ind.

Schools for X-Ray Technicians

The American Registry of X-Ray Technicians, sponsored by the American College of Radiology and the American Society of X-Ray Technicians, initiated the first steps in the approval program of schools for x-ray technicians. This procedure continued until 1943, when the Council on Medical Education and Hospitals was asked to prepare standards, inspect courses of training, and develop lists of acceptable x-ray schools. Complying with this request, the Council established educational standards the following year, and in 1945 published a list of 112 approved schools, which now have been increased to 326. The present requirements specify that acceptable schools may be conducted by approved medical colleges, general hospitals, or x-ray departments affiliated with a general hospital. Preliminary college education is not required in this field, as students may enter after four years of high school or graduation from an accredited school of nursing.

In September, 1949, the Council held a meeting with the American College of Radiology to consider the revision of standards and the establishment of a cooperative plan for the continued approval and inspection of x-ray schools. The American College of Radiology subsequently appointed state councilors to participate in the inspection of these schools. A survey form, prepared by the College with the assistance of the Council, was employed, and all data were evaluated by an advisory committee and further reviewed by both the Board of Chancellors of the College and the Council. Careful analysis revealed that the great majority of schools actually approved, as well as those applying for Council approval, were operating in general conformity with present standards; certain deficiencies were apparent in some schools, while a few others seemed to require a complete reorganization of their training programs. The Board of Chancellors of the American College of Radiology, at a meeting held in Chicago in September, 1951, agreed to continue the inspection of hospitals applying for x-ray approval and to make whatever arrangements might be necessary for reinspections where indicated. At present 18 applications for approval are under consideration.

The 326 schools currently complying with established standards of the Council reported an enrollment of 1,773 students and a maximum capacity of 2,247. There were 1,156 graduates reported for 1952 as compared with 1,080 the previous year, an increase of 76. During the same period 20 new schools were approved, while four training programs were discontinued. Completion of four years of high school is the established entrance requirement in 306 hospitals, the remaining 20 indicating one or two years of college, or the R.N. degree. The standards outlined in the Council's Essentials specify that the course of training should be not less than 12 months, with the following subjects adequately presented: elementary anatomy and physiology, physics, x-ray equipment, darkroom chemistry and procedures, x-ray techniques, ethics, record keeping, and general office or departmental work.

In further analyzing the reports submitted, it is noted that the minimum length of training in 157 hospitals is 12 months; 33 hospitals have indicated 18 months, while a 24 month program is carried out in 123 of the approved schools; 15 months and four years are specified by the remaining 13 schools. While the majority of the hospitals indicate the particular months when classes begin, it is usually possible for students to enter throughout the year as vacancies occur.

Application for approval of schools for x-ray technicians should be submitted to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10, Ill. Inquiries regarding registration of qualified x-ray technicians should be addressed to the American Registry of X-Ray Technicians, 2900 East Minnehaha Parkway, Minneapolis 6, Minn.

Schools of Physical Therapy

The American Physical Therapy Association was responsible for the approval of schools of physical therapy from 1928 to 1936. In 1934, however, a resolution was presented to the House of Delegates asking that the American Medical Association establish a program for the inspection and approval of training schools in this field. The Council on Medical Education and Hospitals received this request, through the Board of Trustees, and immediately proceeded with the inspection of 35 schools of physical therapy in connection with the scheduled field work of the Council's staff. With the assistance of the Council on Physical Medicine of the American Medical Association, the American Congress of Physical Medicine, and the American Physical Therapy Association, the Essentials of an Acceptable School for Physical Therapy Technicians were prepared. These Essentials were adopted by the House of Delegates in 1936 and were revised in 1938, 1939, 1943, 1947, and 1949. The Essentials of an Acceptable School of Physical Therapy, currently in effect, specify that schools may be established in approved medical schools, hospitals, or accredited colleges or universities affiliated with acceptable hospital services. Applicants are eligible who have graduated from an accredited school of nursing or physical education or have completed two years of college with satisfactory courses in biological and physical sciences. Entrance requirements have been raised in individual schools, however, and many are now specifying a minimum of three years of college prior to the period of hospital training.

Thirty-seven courses, including the affiliated units of the Army Medical Field Service School, Fort Sam Houston, Texas, are presently approved by the Council, as compared with 13 in 1936 and 31 in 1951. The total capacity of the senior class during the past year was 842, with an enrollment of 592 students, while the number of graduates during the same period was 582. When high school graduates are admitted to courses sponsored by colleges or universities, a degree is ordinarily granted after completion of the prescribed college and technical training. The tuition in all teaching centers closely parallels college fees.

Application for approval of physical therapy schools should be made to the Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago 10, Ill. Forms will be supplied for this purpose on request. They should be completed by the administrator of the institution requesting this approval. Inquiries regarding the registration of qualified therapists should be addressed to the American Registry of Physical Therapists, 30 North Michigan Avenue, Chicago 2, Ill.

Schools of Occupational Therapy

At the request of the American Occupational Therapy Association, a resolution was presented to the House of Delegates of the American Medical Association in June, 1933, asking that educational standards in occupational therapy be established and arrangements made for the evaluation and approval of individual schools. Through the Board of Trustees the request was referred to the Council on Medical Education and Hospitals and the Council on Physical Medicine. An inspection program was instituted shortly thereafter, and standards were developed by the Council on Medical Education and Hospitals in cooperation with the Council on Physical Medicine and the American Occupational Therapy Association. Thirteen schools were visited, but it was found that only 10 including one Canadian school, were in active operation. It was not until March, 1938, that revised Essentials in this field were approved by the Council on Medical Education and Hospitals and the first list of six approved schools published in THE JOURNAL. A subsequent revision occurred in December, 1949. Briefly, the changes effected related chiefly to the organization of the faculty, medical direction of the clinical training program, and the planning of the school curriculum and were made with the assistance of the Council on Physical Medicine and Rehabilitation of the American Medical Association and the American Occupational Therapy Association. In these requirements it is specified that schools should be established only in approved medical schools or in accredited colleges affiliated with acceptable hospitals. Currently, 27 schools are recognized as meeting the standards of the Council, 2 having been approved during the past 12 months. The minimum length of training is 100 weeks, including 39 of theoretical instruction, 25 of technical training, and 36 of hospital practice.

Efforts to alleviate the continuing shortage of technical personnel in this field have been emphasized in recent years, with the result that there has been a substantial increase in the number of graduates since 1950.

In that year the approved schools reported 377 graduates; by 1951 the number had increased to 418, and in 1952 a total of 441 students satisfactorily completed the prescribed course of study. The student capacity in the senior division has currently been reported as 937 and the enrollment 518.

In 18 of the 27 approved schools the training is on two levels, the duration of the course, entrance requirements, and tuition varying with the type of educational program offered. Nearly all of the approved schools admit high school graduates to courses that are mainly of five years' duration. Some, however, offer a certificate program for college graduates who in practically all instances are given at least 18 months of occupational therapy training. It follows, therefore, that training programs in occupational therapy are seldom completed until the student has been out of high school at least five years. In the Council's standards it is stated that applicants for a college course should fulfill the admission requirements of the school concerned, whereas other candidates should have a minimum of one year of college education or its equivalent. The number of students admitted to the training course should be limited by the facilities of the school.

Application for the approval of a school of occupational therapy should be made to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10, Ill. Forms will be supplied for the purpose on request. They should be completed by the administrator of the institution requesting this approval. Inquiries regarding the registration of qualified therapists should be addressed to the American Occupational Therapy Association, 33 West 42nd Street, New York 18, N. Y.

Schools for Medical Record Librarians

In 1942 the Council on Medical Education and Hospitals was asked to assume responsibility for the approval of schools for medical record librarians. The following year a set of standards was developed in cooperation with the American Association of Medical Record Librarians and a list of 10 acceptable schools was published on the basis of individual surveys. Acceptable schools may be established in approved general hospitals having a minimum of 6,000 annual admissions. Approval may also be extended to medical schools, colleges, and universities having suitable hospital facilities. Students are admitted who have had two years of college or have graduated from an accredited nursing school.

Two schools of medical record library science were approved during the past year, bringing the total number now listed as complying with the present standards of the Council to 23. The total student capacity of these schools has been reported as 205, with 96 students enrolled in 20 schools. Nineteen of the approved schools graduated 92 students in 1952, which is an increase of 34 over last year and 9 over the number graduated in 1950. It is gratifying to notice the increased number of graduates, as the shortage of trained personnel in this field is particularly acute.

As indicated previously, candidates for admission to an approved school of medical record library science should fulfill one of two requirements: completion of two academic years of study in a college of liberal arts approved by a recognized accrediting agency, or graduation from a school of nursing recognized by a state board of nurse examiners. The curriculum of 14 approved schools is so arranged that both graduate nurses and students having had two years of acceptable college training are eligible for the course outlined; a high school diploma only is a requirement in four schools, these training programs being integrated with a full college curriculum of four years; one school accepts college graduates only, three schools have indicated two or three years of college and the remaining school has a diversified program permitting the acceptance of degree students, registered nurses, and high school graduates.

The courses in 20 of the approved schools are so arranged that the beginning date coincides with the opening of the fall semester in September. Matriculation in February, March, and June is also possible in three of these schools, while three others have specified February, March, and June only. College affiliations have been established by 14 schools, and 17 schools accept men students. One hospital has indicated that no tuition is charged, but the range varies in the other schools from $150 to $600, with some specifying regular university fees.

Application for approval should be made to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10, Ill. Special forms will be supplied for this purpose, and when the required information has been received the proposed training program will be reviewed in collaboration with the Committee on Education and Registration of the American Association of Medical Record Librarians. The institutions applying for Council approval will, in all instances, receive full information and every possible assistance in the planning and development of training programs in accordance with present standards. Approval may be withdrawn whenever in the opinion of the Council a school does not maintain an educational service in accordance with existing standards. When a training program has not been in operation for a period of two consecutive years approval may be withdrawn.

Inquiries regarding the registration of qualified medical record librarians should be addressed to the American Association of Medical Record Librarians, 510 North Dearborn Street, Chicago 10, Ill.

Lists of Technical Schools

The lists of hospitals and technical schools are not included in this issue of THE JOURNAL, but have been revised and published as a separate supplement. In the individual fields of medical technology, x-ray technique, physical therapy, occupational therapy, and medical record library science, full information is given with reference to the name and location of each school, college affiliations, directors of schools, entrance requirements, length of training, number of students, and annual tuition. These lists, which contain the names of all technical schools currently approved by the Council on Medical Education and Hospitals of the American Medical Association, will be given wide distribution, with additional copies available on request.

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HOSPITAL SERVICE IN THE UNITED STATES

The annual hospital report of the Council on Medical Education and Hospitals, published in this issue of THE JOURNAL, again shows an increase in the volume of hospital service in the United States. Included in the present report are 6,665 hospitals registered by the American Medical Association, of which 2,078 are designated as governmental and 4,587 as nongovernmental. These institutions admitted 18,914,847 patients in 1952, a total that represents not only an increase of 677,729 in the last 12 months but also a greater number of admissions than has been reported in previous years. Gains were observed in both the governmental and the nongovernmental divisions but were more pronounced in the latter group, which had a net increase of 573,423 as compared with 104,306 in the governmental hospitals. It should also be noted that the nongovernmental hospitals received 13,944,126, or 73.7%, of all patients admitted whereas the governmental units reported 4,970,721, or 26.3%. These totals do not include hospital births, which set a new record of 3,170,495 as compared with the previous high of 2,999,371 in 1951. The present survey, therefore, represents the first year in which the number of hospital births has exceeded the 3 million mark.

The general hospitals, which now total 4,924, showed an increase of 694,236 patients in 1952 and render by far the greatest volume of service in the hospital field. They reported 17,760,057, or 93.8% of all patients admitted and 3,090,807, or 97.5% of the hospital births. Their average daily census of 475,193 represents 36.3% of the daily patient load in all registered hospitals. The psychiatric hospitals, 585 in all, admitted 312,252 patients, or 5,242 more than were reported in the previous year. While this is only 1.6% of all admissions, the average daily census of 704,056 is the highest ever recorded in this field and exceeds the combined total of 605,321 reported by other hospitals. Again it may be shown that the hospitalization of psychiatric patients is largely under governmental control, inasmuch as the hospitals in this division maintained an average census of 688,119 as compared with 15,937 in the nongovernmental group. A similar pattern exists in the tuberculosis division, where the governmental hospitals admitted 95,789 patients and the nongovernmental units 14,136. This present total of 109,925 admissions exceeds the report of 1951 by 2,744. The number of admissions was greatly reduced in the isolation hospitals, which respond mainly to seasonal demands, and losses were also recorded in some of the other groups. In all registered hospitals the average daily census of 1,309,377 represents a total of 479,231,982 patient days, including 173,920,638 in the general hospital group, 257,684,496 in the psychiatric institutions, 27,542,598 in the tuberculosis hospitals, and 20,084,250 in other units. When these hospitals are classified by control, it will be seen that the governmental hospitals list 360,166,692 days of patient care and the nongovernmental institutions 119,065,290.

Included in the present capacity of 1,541,615 hospital beds are 1,099,623 in governmental institutions and 441,992 in the nongovernmental group. The federal hospitals have 211,510 beds, the state institutions 691,408, the city and county hospitals 196,705, the church and other nonprofit associations 390,987, and the proprietary hospitals 51,005. It can also be shown that the general hospitals list 41.5% of the total beds, the psychiatric institutions 47.5%, the tuberculosis sanatoriums approximately 6%, and the remaining institutions 5%. In the last year the average bed occupancy advanced from 84.5 to 84.9%. Gains occurred mainly in the governmental group, which advanced from 88.6 to 89.4%, while the nongovernmental rate was reduced from 74.1 to 73.6. In the general hospitals the percentage of beds occupied was 74.1 as compared with 73.5 in 1951. The lowest rate, 40.9%, was observed in the isolation hospitals, whereas the highest report, 96.0%, was found in the psychiatric group, where long-term institutional care is ordinarily required. The average length of stay per patient in general hospitals was reduced from 10.1 days to 9.8. Shorter periods of hospitalization were reported by all groups except the federal general hospitals, which advanced from 25.5 to 26.2 days, and the individual and partnership hospitals, which remained at their previous level of 5.3. The state hospitals listed 14.1 days, the county institutions 11.9, the municipal hospitals 11.7, the city-county units 9.0, the church and other nonprofit associations 7.7, and the proprietary hospitals 5.7.

Many of the hospitals registered by the American Medical Association have long taken an active part in educational functions essential to the maintenance of high standards of hospital care. Approximately 300 hospitals are participating in undergraduate medical education, 871 are approved for internships and 1,153 for residency training. A total of 100,595 students are now enrolled in 1,079 accredited schools of professional nursing, and the present report shows 310 additional schools for practical nurses with an enrollment of 5,712.

The list of hospitals registered by the American Medical Association is not included in the present issue of THE JOURNAL. It has been printed as a separate supplement, however, and will be distributed to all hospitals, medical schools, state medical associations, county medical societies, editors of state medical journals, state boards of medical examiners, state and national hospital organizations, state health officers, state boards of nurse examiners, and other agencies associated with hospital services. Copies of the hospital list are also available to individual physicians and other subscribers to THE JOURNAL and may be obtained from the Council on Medical Education and Hospitals of the American Medical Association.

TECHNICAL PERSONNEL

In recent years considerable attention has been given to the continuing shortage of well-trained technical personnel for hospital service and other community health needs. Estimates of requirements in individual fields vary to such an extent, however, that further knowledge of the actual use of technical personnel in hospitals and other areas would seem essential as a basic approach to the solution of this problem. In recognition of this need, the Council on Medical Education and Hospitals, in its annual hospital census of 1952, undertook to obtain information on technical personnel employed in hospital service. Elsewhere in this issue (page 159) is a report on technical personnel in which it is shown that the hospitals registered by the American Medical Association were at the time of reporting employing 23,822 technical laboratory workers, 12,412 x-ray technicians, 4,707 physical therapists, 3,953 occupational therapists, 6,167 medical record librarians, 10,546 other medical record personnel, 8,867 dietitians, and 778 clinical photographers. The number of pharmacists included 3,785 employed full-time and 575 part-time. Further reference should be made to the tables and textual material of the published report, which give more detailed data on the distribution of technical personnel in hospitals classified by states, control, type of hospital service, and size.

A report on the technical schools approved by the Council on Medical Education and Hospitals is also included and shows that there are currently 538 approved schools of medical technology, 326 schools for x-ray technicians, 37 schools of physical therapy, 27 schools of occupational therapy, and 23 schools for medical record librarians. In the field of medical technology, 2,063 students graduated last year, in x-ray technique 1,156, in physical therapy 582, in occupational therapy 441, and in the field of medical record library science 92. While these totals represent a considerable increase over the number of graduates reported in 1951, it is still recognized that additional facilities and training programs will be required to meet existing shortages as well as anticipated future demands. Every consideration is now being given to this problem, and many studies have already been developed by various organizations directly concerned with the production and use of well-trained technical personnel.

EXTENSION OF THE "DOCTOR-DRAFT LAW"

A survey of about 55,000 physicians called to military service during World War II conducted by the American Medical Association several years ago gave the first clear indication of the need for civilian participation in military medical planning. Since that time there has been a gradual acceptance of the fact that the health of the nation requires a careful correlation of military and civilian medicine.

The implementation of this concept through the efforts of the American Medical Association and a series of civilian advisory committees within the Department of Defense and other executive branches of the government has resulted in improvement in the use of medical manpower by the Armed Forces. It is encouraging to note that, despite a substantial reduction in the ratio of physicians to troop strength, the health care of our military forces is now at an all-time high.

Unfortunately, however, it was necessary on April 24 for the American Medical Association in its appearance before the Armed Services Committee of the House of Representatives to again acquiesce in a temporary extension of the law. In testifying for the Association with respect to H.R. 4495, 83rd Congress, Dr. Edwin S. Hamilton pointed out that the medical profession was not content to remain permanently "saddled" with discriminatory draft legislation as long as possible alternative ways of meeting the medical manpower problems of the armed forces have not been fully explored. In discussing this subject he suggested (*a*) increased utilization of civilian contract physicians; (*b*) establishment of a more effective volunteer officer recruitment program; (*c*) greater improvement in utilization of physicians in uniform; and (*d*) curtailment in the provision of medical care and hospitalization for dependents of service personnel and other civilians, when adequate civilian health personnel and facilities are available.

The statement of the Association (see page 166), in addition to recommending a number of technical amendments to H.R. 4495, also suggested that all physicians falling within the definition of priority 4 be excluded from any further liability under the law. The soundness of this proposal, which would also include reservists coming within this definition, is apparent, since there are more than enough physicians in priorities 1, 2, and 3 to meet the requirements of the armed forces for physicians for at least the next three years.

The inequities created by the present priority system, particularly with respect to men in the second priority, were discussed at length by the Association in its testimony. It was recommended that the required period of service for these men be reduced from 24 to 12 months, provided they had 12 or more months of service since Sept. 16, 1940. The Association also suggested that accrued or terminal leave as well as travel time be included in computing total active service and that service with a co-belligerent country between Sept. 16, 1940, and Sept. 2, 1945, be similarly recognized.

The question of additional pay of $100 a month for physicians in service was also discussed by Dr. Hamilton. The committee was advised that the Association was concerned by the report of the so-called Strauss Commission submitted last month that recommended, in part, that such pay be limited to physicians who volunteer for active duty for longer than 24 months.

The Association has advocated and will continue to advocate this special pay. It is believed that the payment of the additional $100 per month to physicians in service is justified to equalize and adjust their compensation and that its termination would drastically impair the ability of the medical corps to attract volunteers.

In its report the Strauss Commission stated that "this pay should be limited to those doctors or dentists willing to serve on a career basis or for periods of military service longer than those required of citizens generally." Apparently, the commission is either not aware of, or has chosen to ignore, the fact that physicians are subject to double draft liability and as such are obligated for periods of military service "longer than those required of citizens generally."

ORGANIZATION SECTION

HOTEL RESERVATIONS FOR NEW YORK MEETING

All physicians who are planning to attend the annual meeting of the American Medical Association in New York City, June 1-5, are urged to make their hotel reservations as soon as possible before all the desirable rooms have been taken. Write direct to Dr. Edward P. Flood, Chairman, American Medical Association, Subcommittee on Hotels, 500 Park Avenue, New York 22, New York. For an application blank for hotel accommodations, see advertising pages 102 and 103 in this issue of THE JOURNAL.

STATEMENT BEFORE HOUSE COMMITTEE ON EXTENSION OF "DOCTOR-DRAFT LAW"

Gentlemen: I am Dr. Edwin S. Hamilton of Kankakee, Illinois, where I am engaged in the active practice of medicine. I am a member of the Board of Trustees of the American Medical Association and am appearing here today (April 24, 1953) as a representative of that Association concerning H. R. 4495, 83rd Congress.

Before discussing the details of the bill and the various amendments which we are suggesting for your consideration, I would like to review the record of events within the American Medical Association having a relationship to the procurement of medical officers for the Armed Forces and the attitude of the Association concerning the need for this compulsory legislation.

Shortly after the close of World War II, the Association made a survey of the 55,000 physicians called to military service and the effects of their withdrawal upon the civilian economy. The results of the survey which were studied by the Association and discussed with the Surgeons General of the Armed Services were instrumental in the elimination of several sources of dissatisfaction among physicians in service. They also demonstrated that civilian participation in military medical planning is imperative.

The Cooper Committee, for a time advisory to the Secretary of Defense, and the original Medical Advisory Committee to the National Security Resources Board were in part, at least, the result of efforts of the Association. The Office of the Medical Director in the Department of Defense followed by the Armed Forces Medical Policy Council, the recently established position of Special Assistant to the Secretary of Defense for Health Affairs, the Health Resources Advisory Committee to the Office of Defense Mobilization, and the Committee of the same personnel advisory to the Office of Selective Service, all reflected the evolution of the concept that the health of the nation demands a careful correlation of military and civilian medicine.

The result of these efforts has been a growing awareness of the need for the most effective utilization of physicians in uniform. Progress along this line has been gratifying, as shown by the fact that the health care of our fighting forces is at an all-time high today despite a very substantial reduction in the ratio of physicians to troop strength since World War II.

The first overt attempt at special draft legislation to procure physicians for the military was in the Second Session of the 80th Congress. This legislation, which was opposed by the American Medical Association, was followed by the "moral suasion" program. The failure of that program, coupled with the extra demands precipitated by the Korean incident, resulted in the "Doctor Draft Law" of 1950.

In August of that year the Association supported such legislation, notwithstanding its discriminatory character. The urgent need for additional medical officers at that particular time allowed only two choices: (1) the recall of Reserve officers who had active military service during World War II, or (2) the adoption of legislative provisions for the call-up of physicians who had been deferred during World War II or who, under a Navy V-12 or an Army Specialized Training Program, had received assistance from the federal government to complete or continue their medical education.

In testifying on the bills which were later enacted, the Association based its approval on (1) the need of the Armed Services for medical personnel; (2) the necessity for an equitable selective system; and (3) the desire to avoid the depletion of civilian medical manpower in certain critical areas such as occurred during World War II.

Our testimony recommended changes in the priority system and urged that medical manpower thus involuntarily acquired be used only on assignments essential to the war effort. Singled out as excluded from such a category was the provision of medical care for veterans, civilian employees of the government and dependents of service personnel in other than overseas areas or where civilian facilities were unavailable or inadequate.

However, since 1950, notwithstanding the need for more efficient utilization of health personnel because of the war existing between the United Nations and the Communist forces in Korea, nonmilitary medical activities of the type outlined in the preceding paragraph have increased.

This fact, plus the prediction by representatives of the Department of Defense that compulsory draft legislation may be necessary for five more years, is giving the medical profession cause for serious concern. While prevailing circumstances may necessitate a temporary continuation of the "Doctor Draft Law" in order to insure the best medical care for our nation's fighting men, we are not content to remain permanently "saddled" with discriminatory legislation of this type. It is our belief that a one year extension of the law is sufficient.

We believe that the Armed Forces and the Congress should make a more concerted effort to devise alternative methods of meeting military medical personnel requirements and thus obviate entirely the necessity for a "Doctor Draft Law." Some suggestions which we would make, which have not been fully explored, include improved utilization of medical manpower by the military. Considerable progress has been made along this line since the close of the last war; however, utilization has not yet reached the degree that should prevail before resorting to the drafting of additional physicians. There should also be increased utilization of civilian contract physicians in performing the medical duties of the Armed Services.

In addition, the whole matter of medical officer procurement through voluntary means needs careful reexamination. On Dec. 22, 1952, the Association recommended that a committee composed of civilians be appointed to investigate ways of increasing the attractiveness of service in the military and naval Medical Corps and to develop a more efficient program for medical officer and allied health personnel procurement. To our knowledge action has not been taken to date on this suggestion.

The Association is also concerned with the continual increase of dependent medical care, as a matter of convenience, when adequate civilian health personnel and facilities are available. Since the original limited authorization of 1884 there has been a gradual abandonment of the theory of that legislation. It appears that it may be time for the Congress to determine whether the provision of medical care and hospitalization benefits for dependents of service personnel is a proper emolument of military service and if so to what degree and under what conditions such care should be provided and by whom.

The American Medical Association has, since the passage of Public Law 779, 81st Congress, worked closely with the three Surgeons General, the Selective Service System and its national and local medical advisory committees, and the Department of Defense in an attempt to (1) facilitate and increase the efficiency of the administration of the "Doctor Draft Law"; (2) effect a timely and orderly system of recall and rotation of medical reservists; (3) prevent a repetition of

the medical overstaffing which occurred in certain areas during World War II, and (4) curtail the utilization of medical personnel on non-professional assignments. These activities are responsible, in part, for the decrease in the ratio of physicians to troop strength from 6.0 to 3.7 per 1000, and the possible further decrease of the ratio of 3.0 per 1000 in the near future.

H. R. 4495 would reenact the language of Public Law 779, 81st Congress, as amended, and extend the effective date of that law until July 1, 1955. The bill would thus retain the four priority classifications contained in existing law, and continue to subject the entire medical profession to double liability for involuntary military service.

As I will point out in more detail later, it is the considered view of the Association that any extension of the "Doctor Draft Law" should be limited to one year. From the figures supplied by the Selective Service System and the Armed Forces it is obvious that available physicians in priorities 1, 2 and 3 will exceed the medical manpower requirements of the Armed Services for one, two or even three years. There is no apparent reason therefore for continuing to subject approximately 60,000 physicians in priority 4 to the discriminatory provisions of the law.

We therefore strongly urge that the liability for registration and call-up of veteran physicians falling within the priority 4 classification, as well as the involuntary recall of medical reserve officers in this category be terminated as of July 1, 1953. Consideration must also be given to the inequities which have resulted in the case of certain men in priority 2, and to the alleviation of such inequities as far as possible.

At the time of the hearings on the bill which became Public Law 779, 81st Congress, representatives of the American Medical Association testified in favor of a different priority system. It was the recommendation of the Association, in effect, that present priorities 2 and 3 be reversed. Our recommendations were not adopted.

Inasmuch as the registrants in priority 2, with the exception of those having temporary deferments, have been called into service, it would appear that the only remaining way in which a measure of equity can be insured in these cases is by establishing a shorter tour of duty for those physicians who had substantial service during World War II. The Association is, therefore, recommending that the period of duty required of medical registrants or reservists who are recalled to military service be limited to 12 months if they had 12 or more months of service since September 16, 1940.

There are also a substantial number of physicians who are classified in priority 2 rather than priority 4 because they were not given service credit for accrued or terminal leave. While it is true that legislation enacted in 1946 provided for a lump sum cash settlement for terminal or accrued leave, it appears that in the administration of this law the various Service Commands of the Armed Forces followed different procedures. Some Commands gave service credit for accrued leave; others did not. As a result, physicians with identical records of service have been classified differently—some are in priority 2, some are in priority 4. It is the recommendation of the Association that all accrued or terminal leave, as well as travel time allowed at the time of separation from service, be included in computing total active duty or active service.

With respect to the call-up of priority 3 physicians, the Association is recommending that those men who have just completed their internship should be called first and that any deficit be met by calling men in equal percentage in age groups below 40 and above 40. The Association is in agreement with the retention of the present maximum age of 51 and with the reenactment of the present provisions of law which permit the deferment of those individuals who are essential to the national health, safety and interest.

The National Advisory Committee to the Selective Service System and its counterparts at the state and local level now have the responsibility of advising the Selective Service System on questions of essentiality. This same Committee, in its role as the Health Resources Advisory Committee to the Office of Defense Mobilization, has been responsible throughout the life of the present "Doctor Draft Law," for considering the requirements for the Armed Services for physicians, dentists and allied health personnel to assure an equitable distribution of such personnel between the Armed Services and the civilian population. It is the recommendation of the Association that the functions of this Committee in both capacities be continued. H. R. 4495 would also provide for a variety of additions to the present law. I will confine my remarks, however, to those provisions concerning which we are in doubt or in disagreement.

The bill would: (*a*) Give credit for service between Sept. 16, 1940, and Sept. 2, 1945, in the Armed Services of any country allied with the United States during World War II.

> The Association is heartily in accord with this recommendation. Some time ago the Selective Service System, by regulation, recommended that the call-up of priority 3 physicians with co-belligerent service during World War II be deferred. Inasmuch as this regulation was not mandatory on local Selective Service draft boards, some physicians in this situation now in priority 3 will probably be called into service before July 1, 1953. For this reason it is our recommendation that this provision be made retroactive to September 9, 1950, and if any physician with such service has been called into service that he be released upon request.

(*b*) Exclude from liability for registration and for further service physicians with 12 or more months of service since June 25, 1950.

> The inclusion of a provision of this type would, in effect, make a distinction between service during World War II and service since the Korean incident. The reason for such a distinction is not obvious to us. We believe, however, that the adoption of our previously mentioned recommendation with respect to the exclusion of priority 4 physicians from any further liability would remove the Korean veteran and the World War II veteran from the discriminatory provisions of the law.

(*c*) Authorize the appointment or commissioning of medical officers in grades "commensurate with professional education, experience or ability."

> It is our understanding that this provision is designed, in part, to waive current restrictions concerning the number of medical officers eligible for commissions in the higher grades. This is certainly desirable and necessary if older physicians in priority 3 are called into service and if the present grade structure is to be maintained.
>
> It is not clear what other possible result this section is designed to effect. We are assuming that it will authorize and produce the issuance of regulations which will alleviate the inequitable situations resulting from the recall of reservists at the same grades which they had at the time of their separation from active duty following World War II. Existing procedures do not uniformly recognize additional civilian medical experience or education acquired since World War II for reservists although physicians entering the service for the first time, with the same aggregate medical experience, are given higher grades. It is our belief that this provision should also be made retroactive.

(*d*) Terminate automatically upon completion of 24 months of service the reserve commissions of all physicians taken into the service by operation of the law.

> We believe that if physicians are to be taken into the Armed Forces involuntarily they should, on completion of military service, be given the option of retaining or resigning their reserve commission. Some provision should also be made in the section which will permit physicians who are currently members of the reserves to resign their commission if they so desire.

As indicated earlier, H. R. 4495 would extend the effective date of the "Doctor Draft Law" until July 1, 1955. This recommendation by the Department of Defense is based upon an assumed continuation of (*a*) the present international situation, (*b*) the need for the same number of medical officers that are in service today, (*c*) the present utilization of medical

personnel in the Armed Forces, and (*d*) an inability on the part of the Armed Services to attract a larger number of volunteers and members of the regular Medical Corps.

The American Medical Association is recommending, instead, that any continuation of the law be limited to one year. We are extremely anxious to terminate discriminatory legislation of this type and feel that a two year extension is unnecessary. We believe that the possible termination of the war in Korea, the suggested reduction of the Armed Forces, better utilization of medical manpower by the Armed Services, increased utilization of civilian contract physicians, a reduction in the amount of non-military medical care and a more effective volunteer recruitment program would eliminate the necessity for compulsory legislation during the coming year.

We have ample reason to believe that with lessened requirements for physicians by the Armed Forces, with the availability of additional men whose temporary deferments are terminating and with an ever-increasing number of non-veteran medical graduates with liability under the basic Universal Military Training and Service Act, the need for compulsory draft legislation is disappearing. We therefore urge most strongly that any new extension of this law be limited to July 1, 1954.

In conclusion, there is one extremely important matter which I would like to discuss. It is the additional pay of $100 per month currently payable to physicians and dentists in the Armed Forces. We are considerably disturbed by the report of the so-called "Strauss Committee" submitted last month which recommended, in part, that such pay be limited to those physicians who volunteer for active duty in excess of 24 months.

We have in the past and will continue to advocate this additional pay. It is the belief of the American Medical Association that not only is the payment of the additional $100 per month to physicians and dentists in service justified to equalize and adjust their compensation and alleviate, in a measure, the discriminatory features of this medical draft legislation, but that termination of such pay would drastically impair the ability of the Medical Corps to attract volunteers. In addition, its termination would be a breach of moral contract freely established by the Congress. We are concerned by any move which would reduce the number of medical officer volunteers at a time when a more aggressive and effective voluntary recruitment program is indicated.

The Commission in its report stated: "It is the belief of the Commission that this pay should be limited to those doctors or dentists willing to serve on a career basis or for periods of military service longer than those required of citizens generally." Apparently the Commission is either not aware of, or has chosen to ignore, the fact that physicians are subject to double draft liability and as such are liable for periods of military service "longer than those required of citizens generally."

This concludes my formal statement. I have attached but, with your permission, will not read a listing of the amendments to the bill which we are advocating and which I have mentioned in my statement. I want to thank the Committee for allowing our Association an opportunity to testify on this bill. I shall be happy to answer to the best of my ability any questions which members of the Committee may have.

TELEVISION AWARD

At the American Exhibition of Educational Radio and Television Programs, recently sponsored by the Institute for Education by Radio-Television, Ohio State University, Columbus, special mention was awarded to "Medicine and the Mighty Atom," produced by the A. M. A. Bureau of Health Education, of which Dr. W. W. Bauer is director, and the National Broadcasting Company. The citation was given "for utilizing the facilities of remote broadcasting to bring a first-hand picture from the Brookhaven National Laboratory of atomic research and development in relation to medicine, thus indicating that atomic energy has tremendous peaceful uses and is already contributing to the conquest of disease."

COMMITTEE ON LEGISLATION

The following letters were sent by Dr. George F. Lull to congressional committees that held hearings on four measures introduced in the 83rd Congress, H. R. 116 (transportation of fireworks), H. R. 303 and H. R. 1057 (transfer of Indian hospitals), and H. R. 2769 (inspection of factories).

C. JOSEPH STETLER, *Secretary.*

April 20, 1953

The Honorable Chauncey W. Reed, Chairman,
Committee on the Judiciary,
The House of Representatives,
Washington 25, D. C.

Dear Mr. Reed:

It has come to the attention of the American Medical Association that your Committee will conduct hearings on April 22, 1953, relative to H. R. 116, 83d Congress. It is my understanding that this measure would prohibit the transportation of fireworks into any state in which the sale of such fireworks is prohibited unless they are to be used for public displays or other purposes specifically authorized by the laws of such state.

Because of the many injuries which result each year from the indiscriminate use of fireworks, the medical profession is concerned with this serious menace to life and health. I should like, therefore, on behalf of the American Medical Association, to submit certain pertinent statistical information for your consideration.

From 1903 to 1916 the American Medical Association prepared and presented in its Journal annual summaries of deaths and injuries resulting from the celebration of the 4th of July. Following 1916, which was the first year without a single case of tetanus, the reports were discontinued until 1937 when the increase in the number of injuries prompted the renewal of the annual report. Because of World War II these surveys were discontinued from 1942 to 1945, inclusive. The results of the survey conducted in 1946, indicating a reduction in the number of fatalities and injuries caused by fireworks, again resulted in a discontinuance of this service.

Figures reflecting the number of deaths and injuries for the years during which these surveys were conducted are shown below. The figures listed are in all probability incomplete, inasmuch as some injuries were undoubtedly treated by hospitals and private physicians and not reported. Although not reflected here, statistics have been compiled which show the type of injuries suffered and the states where the accidents occurred.

Year	Dead	Non-Fatal Injuries	Total Dead or Injured
1903	466	3,983	4,449
1904	183	3,986	4,169
1905	182	4,994	5,176
1906	158	5,308	5,466
1907	164	4,249	4,413
1908	163	5,460	5,623
1909	215	5,092	5,307
1910	131	2,792	2,923
1911	57	1,546	1,603
1912	41	947	988
1913	32	1,131	1,163
1914	40	1,466	1,506
1915	30	1,135	1,165
1916	30	820	850
1937	20	7,205	7,225
1938	18	7,933	7,951
1939	13	5,560	5,573
1940	8	4,462	4,470
1941	11	2,039	2,050
1946	6	903	909

Sincerely yours,
George F. Lull, M.D.
Secretary and General Manager
American Medical Association

April 20, 1953

The Honorable William H. Harrison, Chairman,
Subcommittee on Indian Affairs
Committee on Interior and Insular Affairs,
House of Representatives,
Washington, D. C.

Dear Mr. Harrison:

I would like to take this opportunity on behalf of the American Medical Association to respectfully submit for your consideration our views concerning H. R. 303 and H. R. 1057, 83d Congress, which are now pending before your Committee.

These bills, which are designed to provide for the transfer of the functions, responsibilities and duties of the Department of the Interior and the Bureau of Indian Affairs relating to the health and hospitalization of Indians to the United States Public Health Service, have the active approval of the American Medical Association. It is the belief of the Association that the transfer of such facilities to the United States Public Health Service would result in much needed improvements in the health facilities and hospitals available to the Indian population of the United States. Administration of these installations by the Public Health Service would facilitate the recruitment of necessary physicians and allied health personnel and would insure a higher degree of medical care for the beneficiaries of the program.

The position of the Association in this regard was established by the Board of Trustees during the 82d Congress and reiterated by the Board on Feb. 6, 1953. I therefore urge, on behalf of the Association, that the subject legislation be reported favorably by your Committee.

Sincerely yours,
George F. Lull, M.D.
Secretary and General Manager
American Medical Association

April 20, 1953

The Honorable Charles A. Wolverton, Chairman,
Committee on Interstate and Foreign Commerce,
The House of Representatives,
Washington 25, D. C.

Dear Mr. Wolverton:

I would like to take this opportunity, on behalf of the American Medical Association, to submit for your consideration our views concerning H. R. 2769, 83d Congress, which is currently being studied by your Committee.

It is my understanding that this bill would amend Section 704 of the Federal Food, Drug and Cosmetic Act and would authorize the Food and Drug Administration to inspect factories without first making a request and obtaining permission. It is the belief of the American Medical Association that the principle of this bill is a proper one and that the measure should be adopted, provided that proper safeguards are included to protect the physician-pharmacist-patient relationship. While it may not be the intention of the sponsors of the bill that it be applicable to anything other than factory inspections, we believe that language should be included which will clearly indicate that the bill has no application to confidential business and professional records which have no specific bearing on the enforcement of the Food, Drug and Cosmetic Act.

I should like to urge, on behalf of the American Medical Association, that the subject legislation be reported favorably by your Committee, subject to the amendments indicated.

Sincerely yours,
George F. Lull, M.D.
Secretary and General Manager
American Medical Association

SUPPLEMENT TO FILM CATALOG NOW AVAILABLE

The A. M. A. Committee on Medical Motion Pictures has announced the publication of a supplement to the list of films available through the motion picture library. This supplement includes 12 motion pictures added to the library since publication of the Dec. 1, 1952, catalog. Copies may be obtained by writing to the committee.

FEDERAL MEDICAL LEGISLATION

To Clarify the Law on Hospitalization of Non-Service-Connected Cases

The present law authorizes the hospitalization of veterans with non-service-connected disabilities, diseases, or defects if (*a*) beds are available in Veterans Administration hospitals and (*b*) the veteran swears he is unable to pay, signing an oath form prepared by the Veterans Administration. By law such oath must be accepted as "sufficient evidence of inability to defray necessary expenses." Congressman Teague (D., Texas) in H. R. 4601 proposes to make the VA Administrator, rather than the veteran himself, the judge of the veteran's ability to pay, especially in the care of general medical cases. The present law makes no provision for partial payment of costs by the veteran. The Teague bill provides, "That the Administrator is authorized to collect from any veteran of any war admitted to a Veterans' Administration facility for necessary hospital care of a non-service-connected disability, disease or defect a part of the established rate for such hospital care in any case where (1) the veteran agrees to pay such rate in part or (2) the Administrator finds that the veteran is able to pay such rate in part." The present law would be further clarified by giving preference in admission among non-service-connected cases to those veterans in need of extensive hospital treatment for long-term ailments and who are unable to earn a living for an indefinite period. Such veterans would not be required to prove inability to pay. This measure was referred to the Veterans' Affairs Committee.

Federal Aid for Ambulance Service

Congressman Heller (D., N. Y.) would provide in H. R. 4456 "to assist the large cities of the United States in establishing and maintaining more adequate systems for the provision of efficient ambulance service. . . ." An authorization of 2 million dollars annually is provided in this measure, to be administered by the Federal Security Administrator. Cities are defined as incorporated municipalities or urban areas of 100,000 or more population. To be eligible a city must agree to "(1) designate a municipal agency which is acceptable to the Administrator as the sole agency for carrying out such purpose; (2) contain a detailed statement, acceptable to the Administrator, of the centralized control system for emergency ambulance service which is to be established in such city, or which is in operation in such city; (3) provide that the designated municipal agency will make such reports, in such form and containing such information as the Administrator may from time to time reasonably require, and give the Administrator upon demand access to the records upon which such reports are based; and (4) provide adequate assurance that Federal funds paid to the city under the Act will be expended solely for the purpose for which paid." The maximum federal contribution could not exceed 10% of the total cost of the local program. This bill was referred to Interstate and Foreign Commerce Committee.

NOTE: The position of the Administrator of the Federal Security Agency was abolished by Reorganization Plan No. 1, April 11, 1953, and his functions were taken over by the new Secretary for Health, Education, and Welfare.—ED.

National Leprosy Act

Senator Murray (D., Mont.) proposes in S. 1584 that the U. S. Public Health Service intensify its program and lead in a campaign against leprosy. The U. S. P. H. S. would (*a*) conduct an information campaign to promote a more accurate understanding of the disease and its care, (*b*) operate five new leprosariums to be built under the bill, (*c*) arrange and provide for treatment of veterans with leprosy in Veterans Administration hospitals and nonveterans in other approved hospitals, (*d*) establish rehabilitation and reemployment programs for leprosy patients who are discharged from the hospitals, and (*e*) arrange with and select private physicians to treat leprosy patients in the patients' homes, with the patients under legal obligation to remain under specified treatment until the

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The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

disease is arrested and thereafter to have periodical check-ups. Allowances for patients and their dependents, together with compensation for disability incident to leprosy, would be provided. Funds for a research program would be authorized. The measure was referred to the Labor and Public Welfare Committee.

Emergency Maternity and Infant Care

Congressman Bosch (R., N. Y.) in H. R. 4642 proposes to reestablish an emergency maternity and infant care program for wives and infants of enlisted members of the armed forces similar to that in effect in World War II. The Department of Health, Education, and Welfare, through the Children's Bureau, would be authorized to make grants to the states for this program. This measure is similar to S. 1495 (Murray) that was previously reported. It was referred to the Armed Services Committee.

Loans to Health Insurance Cooperative Associations

Congressman Hagen (R., Minn.) at the request of a Group Health Association of St. Paul, Minn., has introduced H. R. 4593, "to assist voluntary nonprofit associations offering prepaid health service programs to secure necessary facilities and equipment through long-term, interest-bearing loans." This measure is identical with S. 1052, which was introduced by Senator Humphrey and previously reported. The measure was referred to the Interstate and Foreign Commerce Committee.

Medical Expense Deductions

Congressman Edmondson (D., Okla.) proposes in H. R. 4450 to amend "the Internal Revenue Code to provide that in those cases where, under existing law, the taxpayer may deduct only so much of his actual expenses for medical care as exceeds 5 per centum of his adjusted gross income, he may henceforth deduct so much of such expenses as exceeds 2 per centum of his adjusted gross income." The measure was referred to the Ways and Means Committee.

Male Nurses for Army Reserve

Congresswoman Frances Bolton (R., Ohio) by H. R. 4447 would provide for the appointment of qualified male nurses in the U. S. Army Medical Reserve, who may be called to active duty with their consent. This is the first time that a commission would be given to men for nursing duty. This measure was referred to the Armed Services Committee.

STATE MEDICAL LEGISLATION

Arizona

Bill Enacted.—H. 134, has become Ch. 130 of the laws of 1953. It provides for the **licensing of nursing homes,** rest homes, sanatoriums, homes for the aged or infirm, or related institutions.

California

Bills Enacted.—A. 1889, has become Ch. 153 of the laws of 1953. It directs the department of mental health to conduct scientific research into the **causes and cures of sexual deviation,** including deviations conducive to sex crimes against children, and the causes and cures of homosexuality, and into methods of identifying potential sex offenders. A. 2966, has become Ch. 224 of the laws of 1953. It provides for the issuance of **temporary permits to professional nurses** licensed under the laws of some other state or licensed under the laws of the Dominion of Canada, providing the applicant is a citizen of the U. S. or has declared his intention to become a citizen. S. 553, has become Ch. 269 of the laws of 1953. It amends the Business and Professions Code by providing that whenever any person has engaged or is about to engage in any acts or **practices which constitute or will constitute an offense against the Business and Professions Code** the superior court of any county, upon proper application, shall issue an injunction to restrain such conduct.

Connecticut

Bills Introduced.—H. 1688, proposes to require the **annual registration** of midwives, nurses, and physiotherapists. S. 897 proposes regulation for the **licensing of certain institutions,** including medical facilities operated by the commission on chronically ill, aged, and infirm.

Bills Enacted.—S. 133, has become Public Act No. 61 of the acts of 1953. It provides for the **biennial examination of medical service corporations** by the insurance commissioner. S. 134, has become Public Act No. 62 of the acts of 1953. It provides for the **biennial examination of hospital service corporations** by the insurance commissioner.

Delaware

Bills Introduced.—H. 387, proposes that every **physician attending or treating epilepsy** shall report immediately to the department of motor vehicles the names, ages, and addresses of all persons treated as cases of epilepsy H. 392, proposes to require every **physician attending or treating a case of wounds,** gunshot wounds, powder burn, or other injury arising from or caused by the discharge of a gun, pistol, or other firearm to immediately report such case to the police authorities. H. 400, proposes to authorize **chiropractors** to present testimony before the industrial accident board. H. 402, proposes the creation of a **state anatomical board** consisting of three physicians. The board would notify the coroners of the respective counties when bodies are desired for medical research and the coroners would be authorized to release bodies to the board under conditions prescribed by this law. The board would also accept and distribute bodies donated to it by will or by the written consent of all the heirs at law of a deceased person. S. 342, proposes regulations for the **licensing of practical nurses,** professional nurses, nurses aides, and attendants.

Florida

Bills Introduced.—H. 280, proposes that any person who shall unlawfully **furnish narcotic drugs to a minor** in violation of the state laws shall be punished by death, unless a majority of the jury recommend mercy. H. 292, proposes to require **every practitioner of the healing arts to register annually** with the secretary of the state board of health and defines healing art as including any system, treatment, operation, diagnosis, prescription or practice for the ascertainment, cure, relief, palliation, adjustment or correction of any human disease, ailment, deformity, injury or unhealthy or abnormal physical or mental condition; and includes practitioners of medicine, osteopathic medicine, chiropractic, chiropody, naturopathy, and optometry. H. 293, to amend the medical practice act, proposes that every graduate of a medical school or college, whether approved by the board or not, and every person practicing as a resident physician, assistant resident physician, or intern in any hospital, shall **register with the state board of health, showing the date upon which he started to practice.** Every hospital employing any resident physician, assistant resident physician, or intern shall, on January and July of each year, furnish to the state board of health a list of such employees and no person may be employed or practice as a resident physician, assistant resident physician, or intern in the hospitals of the state for a period of more than three years, unless he shall become duly licensed as a physician. H. 458, proposes that **insurance policies for the protection of the sick and injured** written and issued by an insurer duly licensed and qualified to make such contracts of insurance by the state insurance commissioner shall be upon presentation of the person insured thereby, immediately and without equivocation honored and accepted in cash payment according to the terms of such policy or by reference thereto as evidenced by a card or other document, by any hospital, clinic, or other taxing district, in payment for medical and hospital care of the person so insured.

Hawaii

Bills Introduced.—H. C. R. 55, proposes to make available to the Territory of Guam the facilities of the Territory of Hawaii for the treatment and care of persons suffering from mental illness and to provide for **the psychiatric training of nurses** from Guam in the institutions of the territory. H. 958, proposes the creation of a **division of mental health** and sets forth its functions. H. 1074, proposes to require the **physical examination of all persons arrested** and charged with a commission of an act involving venereal disease, the examination to consist of the taking of specimens of blood and bodily discharges for laboratory study to determine the presence of venereal disease.

Illinois

Bill Introduced.—H. 508, proposes that no **medicament sold or intended for sale for internal consumption,** other than on a prescription of a qualified physician, dentist, or veterinarian, that contains alcohol shall be sold unless such medicament is labeled and the alcoholic content stated on the label.

Iowa

Bill Enacted.—S. 47, was approved April 21, 1953. It **amends the medical practice act** by requiring applicants to be citizens of the United States or to have declared their intention of becoming citizens and by authorizing the board of medical examiners to require applicants who graduated from foreign medical schools to serve an additional one year as an intern student in an Iowa hospital approved by the board of medical examiners under the supervision of a licensed practitioner. It also provides that any physican who is a graduate of a medical school approved by the board of medical examiners and has completed his one year of internship in a hospital approved by the board and serving only in a residency approved by the board under the supervision of a licensed practitioner of medicine and surgery shall be required to obtain a license or in lieu thereof may obtain a temporary or special license of a resident physician. Such temporary or special license shall be limited to one year and can be renewed from year to year but not to exceed an additional three years of hospital service as a resident physician.

Maine

Bill Introduced.—H. 1274, proposes to require physicians making a **prenatal examination** of a pregnant woman to take a sample of the blood of such woman and submit it to a laboratory for a determination of the Rh factor.

MEDICAL NEWS

ARKANSAS

Course in Cardiology.—On May 13-14 the departments of medicine and postgraduate medicine of the University of Arkansas School of Medicine, Little Rock, the Arkansas Academy of General Practice, and the Arkansas Heart Association will sponsor a graduate course in cardiology at the school of medicine. Dr. Robert P. Grant of the National Heart Institute, Bethesda, Md., will discuss "The Clinical Usefulness of Vector Technique in Electrocardiography," at 2 p. m. Wednesday.

FLORIDA

First Annual Meeting on Diabetes.—The Florida Clinical Diabetes Association will hold its first annual meeting at the Soreno Hotel, St. Petersburg, May 14-15, in affiliation with the department of medicine of the Graduate School of the University of Florida and the Florida State Board of Health. The meeting is open to members of the Florida Medical Association and to any physician not a member who presents an application approved by a member of his nearest medical society. Dr. Howard F. Root of the Joslin Clinic, Boston, and Dr. Franklin B. Peck, director, medical division, Lilly Research Laboratories, Indianapolis, guest speakers, will deliver about 12 lectures and will address an open meeting, which will follow the dinner Thursday for members of the association and their guests.

GEORGIA

Personal.—Dr. Irving L. Greenberg, Atlanta, recently received B'nai B'rith's fifth annual "man of the year" award for outstanding service to his community.——Dr. Edward S. Marks, Marietta, was selected by the Marietta Junior Chamber of Commerce as Marietta's "young man of the year" for 1952.

Narcotic Violation.—Dr. John D. Owens, Abbeville, was convicted in the U. S. District Court at Americus of violating the federal narcotic law and on Jan. 19 was sentenced to a term of five years. The sentence was suspended, and he was placed on probation for the same period.

State Medical Meeting in Savannah.—The Medical Association of Georgia will hold its annual meeting May 10-13 in Savannah under the presidency of Dr. Cornelius F. Holton of that city. Symposiums will be presented on gastroenterology, vascular surgery, orthopedic surgery (emphasis on trauma), and general practice; also panel discussions on "Treatment of Burns," "Your State Vocational Rehabilitation Program," and "Insurance Problems in Georgia." Guest speakers will be Dr. Louis H. Bauer, Hempstead, N. Y., President of the American Medical Association, who will address the initial meeting of the House of Delegates; Dr. Cyrus C. Sturgis, professor of internal medicine, University of Michigan Medical School, Ann Arbor, who will deliver the Calhoun Lecture on "Advances in Hematology"; and Judge Robert Bryan Carr, Montgomery, Ala., presiding judge of the Court of Appeals of Alabama, who will address the president's dinner.

ILLINOIS

Bacteriologists to Present Pasteur Award.—The Society of Illinois Bacteriologists will confer its sixth annual award for outstanding contribution to the science of bacteriology on Howard John Shaughnessey, Ph.D., Chicago, director of Illinois State Public Health Laboratories since 1938, at a meeting at 6:30 p. m., May 16, at the Edgewater Beach Hotel in Chicago, where Dr. Shaughnessey will deliver the Pasteur Award lecture. Dr. Shaughnessey, who has been professor of public health, University of Illinois College of Medicine, since 1950, was previously affiliated with Yale University, New Haven, Conn., University of Chicago, University of Colorado School of Medicine, Denver, Loyola University School of Medicine (now Stritch School of Medicine of Loyola University), Chicago, and Northwestern University Medical School, Chicago. Under a grant from the International Commission for the Study of Infantile Paralysis, he directed research on infantile paralysis at the University of Chicago, 1927-1930, and from 1927 to 1929 directed an investigation of school ventilation in the Chicago area for the New York Commission on Ventilation. Dr. Shaughnessey served as first secretary for the Society of Illinois Bacteriologists from 1935 to 1937 and as its president from 1946 to 1947.

Chicago

Visiting Professor.—During the week of May 12 Dr. Pereival Bailey, professor of neurology and neurological surgery, University of Illinois College of Medicine, will occupy the George A. Ball visiting professorship in surgery at the Indiana University School of Medicine, Indianapolis.

Third Stillians Lecture.—The Arthur William Stillians lecture of the Metropolitan Dermatological Society of Chicago will be given at its annual meeting at the Palmer House, May 13, by Dr. George V. LeRoy, associate professor of medicine, University of Chicago School of Medicine, on "The Contribution of Radioisotopes to Medical Research."

Meeting on Diabetes in Children.—The Chicago Medical Society and the Chicago Diabetes Association will hold a joint meeting May 15 in the John B. Murphy Memorial Auditorium (50 E. Erie St., MOhawk 4-4050). Miss Helen Lynch, chief of social service, Children's Memorial Hospital, Chicago, will discuss "Emotional and Social Problems in the Child with Diabetes," and Dr. Robert L. Jackson, professor of pediatrics, State University of Iowa College of Medicine, Iowa City, will speak on "Diabetes in Children."

First Hektoen Memorial Lecture.—The Hektoen Institute for Medical Research of the Cook County Hospital announces the first Dr. Ludvig Hektoen memorial lecture, to be delivered by Dr. Paul Klemperer, professor of pathology of Columbia University College of Physicians and Surgeons, New York, on "Collagen Disease—Evolution of the Concept." The lecture will be given May 14 at 8 p. m. in the amphitheatre of the Department of Pathology, Cook County Hospital, 1828 W. Polk St.

MAINE

May Clinics.—The division of maternal and child health, department of health and welfare, announces a cardiac clinic in Bangor, May 29, at the Eastern Maine General Hospital, 9 to 11 a. m.; pediatric clinics to be held at the same hospital May 29, 1:30 p. m., and at Northern Maine Sanatorium, Presque Isle, May 27, 1:30 p. m.; and orthopedic clinics as follows:

Maine General Hospital, Portland, May 11, 9 to 11 a. m.
Knox County General Hospital, Rockland, May 21, 1:30 to 3:30 p. m.
Northern Maine Sanatorium, Presque Isle, May 12, 9 to 11 a. m.
Peoples Benevolent Hospital, Fort Kent, May 13, 10 a. m. to 1 p. m.
Eastern Maine General Hospital, Bangor, May 28, 1:30 to 3 p. m.

MICHIGAN

Dr. Salk to Lecture.—The annual Don W. Gudakunst Memorial Lecture on "Principles of Immunization as Applied to Poliomyelitis and Influenza" will be delivered by Dr. Jonas E. Salk, University of Pittsburgh School of Medicine, at the School of Public Health, University of Michigan, Ann Arbor, May 12, in the afternoon.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Alumni Clinic Day.—The Wayne University College of Medicine Alumni Association, Detroit, will hold its annual clinic day and reunion May 13 at the Hotel Fort Shelby, Detroit. Dr. Charles G. Johnston, professor of surgery, Wayne University College of Medicine, Detroit, will serve as moderator for a panel on "The Management for Certain Cardiovascular Diseases Amenable to Surgery." Other presentations include:

Acute Abdominal Emergencies, Rudolf J. Noer, Louisville.
Diagnosis of Pulmonary and Mediastinal Lesions, Julian Johnson, Philadelphia.
Care of Hand Injuries, Michael L. Mason, Chicago.
Rehabilitation in Management of Arthritis, Frank H. Krusen, Rochester, Minn.
Injuries to Lower Urinary Tract in the Female, Norman F. Miller, Ann Arbor, Mich.

A reception will precede the annual banquet, which will honor the class of 1903.

MISSOURI

Public Meeting on Kidney Trouble.—On May 14 at 8 p. m. the St. Louis Medical Society will present in its auditorium (3839 Lindell Blvd.) the St. Louis Medical Forum, a public meeting, on "Kidney Trouble."

Memorial Lecture.—The lecture on "Some Aspects of Bronchiogenic Carcinoma," recently delivered by Dr. Evarts A. Graham, professor emeritus of surgery at Washington University School of Medicine, St. Louis, was sponsored by the Phi Chi medical fraternity of St. Louis University School of Medicine, to honor the late Dr. Quintman U. Newell, who died in November, 1940. Dr. Newell, founder of the Washington University chapter of the Phi Chi fraternity, which is no longer in existence, served for many years in the department of obstetrics and gynecology at Washington University.

NEBRASKA

State Medical Meeting in Omaha.—The annual session of the Nebraska State Medical Association will convene May 11-14 at the Hotel Paxton, Omaha, under the presidency of Dr. James F. Kelly, Omaha. The golf tournament and trap shoot will be held Monday, 1 p. m. at the Omaha Country Club. Beginning on Tuesday movies will be shown on successive days at about 9 a. m. Luncheon Tuesday will be addressed by Dr. Ulrich R. Bryner, Salt Lake City, president, American Academy of General Practice. Tuesday afternoon there will be symposiums on "Vasopressor Drugs in Management of Shock and the Selection of Antibiotics in the Surgery of Trauma; Special Reference to the Role of the Laboratory" and "Penetrating and Nonpenetrating Injuries to the Abdomen." Tuesday evening, which has been designated "Fun Nite," will be sponsored by the Douglas County Medical Society. Cocktails will precede dinner at 7:30 p. m. at the Omaha Athletic Club, and dancing will follow. Wednesday, 3:30 p. m., there will be symposiums on "Diseases of Oral Cavity" and "Clinical Aspects of the Anterior Pituitary." At the banquet Wednesday, 7 p. m., Mr. Tom Collins, Kansas City, Mo., will present "Two and Two Aren't Always Four." Dr. Heinrich F. G. Kobrak, Chicago, will present an "Otologic Clinic" at 9:30 a. m. Wednesday. Other out-of-state speakers are:

Francis W. Pruitt, San Francisco, Lower Nephron Nephrosis as Seen in the Korean Casualties and Its Management.
Elmer A. Lodmell, San Francisco, Roentgenologic Manifestations of Cardiovascular Injury.
Carleton Mathewson Jr., San Francisco, Significance of Multiple Injuries in Relation to the Surgery of Trauma.
Lowell A. Rantz, San Francisco, Uses and Abuses of Antibiotics in the Surgery of Trauma.
Rubin H. Flocks, Iowa City, Medical Management of Urolithiasis.
Edward H. Rynearson, Rochester, Minn., Clinical Syndromes Resulting from the Over-and-Under Function of the Adrenal Glands.
George S. Johnson, San Francisco, Some Problems of Psychiatry.
Mark R. Everett, Ph.D., Oklahoma City, Problems of the Modern Medical Teaching Center.
Isadore Dyer, New Orleans, Obstetric Aspects of Prematurity—Prevention and Management.
Henry R. Kahle, New Orleans, The New Outlook in Coarctation of the Aorta.
Conrad G. Collins, New Orleans, Ectopic Pregnancy.

The Woman's Auxiliary, which will meet simultaneously, will have a joint meeting with the state association Thursday 12:30 p. m., at which Dr. Gunnar Gundersen, La Crosse, Wis., will present a paper on "You and the American Medical Education Foundation."

NEW YORK

Dr. Long to Lecture.—The first annual Emanuel B. Schoenbach memorial lecture will be given by Dr. Perrin H. Long, professor of medicine, State University of New York College of Medicine at New York City, Brooklyn, at 9 p. m. May 14 in the solarium of the Maimonides Hospital of Brooklyn.

Refresher Courses in Pediatrics.—Refresher courses in pediatrics, designed to meet the needs of general practitioners, will be held May 18-30 and June 8-20 at the University of Buffalo School of Medicine under the sponsorship of the Medical Society of the State of New York and the Bureau of Maternal and Child Health, New York State Department of Health. Tuition for each physician enrolled is paid directly to the University of Buffalo School of Medicine by the state department of health, and a stipend of $125 is provided to physicians approved for and attending the courses.

Einstein College of Medicine.—America's first medical college under Jewish auspices was named the Albert Einstein College of Medicine at recent ceremonies held in connection with Professor Einstein's 74th birthday. The new medical college, part of Yeshiva University, will be constructed in the northeast Bronx as the first unit of a 25 million dollar medical center, eventually to include colleges of dentistry, nursing, public health, and postgraduate studies, and student dormitories. Prior to the meeting more than 3 million dollars had been raised of the 10 million dollars needed to construct and equip the college, and an additional $520,000 was raised at the birthday celebration.

New York City

Dr. Milgram Accepts New Post.—Dr. Joseph Elias Milgram has been appointed to the newly created post of full-time director of orthopedics at the Hospital for Joint Diseases. Dr. Milgram was formerly affiliated with the State University of Iowa College of Medicine, Iowa City. During World War II he was orthopedic consultant to the Seventh Service Command. In 1949 he was sent to Germany for three months as civilian orthopedic consultant to the Surgeon General. He has contributed many papers to orthopedic literature.

Personal.—Dr. Robert H. Kennedy recently delivered the Nu Sigma Nu Lecture on "Traumatic Surgery" at the University of Texas Medical Branch, Galveston.——Dr. George Schwartz was named recipient of the Bronx Outstanding Citizen Award for 1952, given annually by the Bronx Lion's Club, for outstanding civic, welfare, and patriotic work.——Dr. Edwin B. Bilchick has been appointed chief of the otolaryngology clinics of the Vanderbilt Clinic, Columbia University Presbyterian Hospital Medical Center.——Dr. Norman H. Jolliffe has been reelected as president of the National Vitamin Foundation and Dr. Robert S. Goodhart as executive vice-president and scientific director.

NORTH CAROLINA

State Medical Meeting in Pinehurst.—The annual meeting of the Medical Society of the State of North Carolina will be held at the Hotel Carolina, Pinehurst, May 10-13 under the presidency of Dr. J. Street Brewer, Roseboro. Clinics with motion picture films will be held Sunday at 2 p. m. and Monday at 2:30 p. m., and a fracture postgraduate session Monday at 10 a. m. The officers' breakfast in the Crystal Room Tuesday, 8:20 a. m., which will precede the first general session, will be addressed by Dr. William W. Bolton, associate director, A. M. A. Bureau of Health Education, Chicago. The first address of the general sessions will be given at 10 a. m.

by Dr. Louis H. Bauer, Hempstead, N. Y., President of the American Medical Association. Other out-of-state speakers include:

Allergy—General Practice, John M. Painter, Kent, Ohio.
Present Methods of Therapy of Leukemia in Children, Ruth Appleton, Boston.
Anesthesiology in Medical Practice, Harold R. Griffith, Montreal, Canada.
Evaluation of Gamma Globulin as a Passive Agent in the Prevention of Poliomyelitis, William M. Hammon, Pittsburgh.
Role of the Private Practitioner and the Public Health Officer in Mental Health Programs, Paul V. Lemkau, Baltimore.
Anesthesia for Surgery on the Heart and Great Vessels, D. LeRoy Crandell, New York.
Diagnosis and Treatment of Acute Pancreatitis, Vince Moseley, Charleston, S. C.
Diagnosis in Carcinoma of the Oral Cavity and Neck, Henry P. Royster, Philadelphia.
Treatment of Hemangiomata in Children and Pyogenic Granuloma, Frederick M. Hodges, Richmond, Va.
Clinical and Physiological Aspects of Emphysema; Diagnosis and Treatment, Burgess L. Gordon, Philadelphia.

The president's dinner in the main dining room Tuesday, 7 p. m., will be addressed by Dr. Brewer and by Countess Maria Pulaski, Park Ridge, Ill., who will speak on "My Life as a Spy." The floor show at 10 p. m. will precede the president's ball. On Wednesday at 11:10 a. m. there will be a joint session of the medical society and the state board of health, and at 2:30 p. m. the Section on Pathology will present a symposium on myocarditis. The Medical College of Virginia alumni dinner will take place Monday, 6 p. m. in the Crystal Room, and luncheons will be held on Tuesday at 1 p. m. by North Carolina medical alumni, University of Pennsylvania medical alumni, and Duke University Medical School alumni. Jefferson Medical College and the University of Virginia Medical Alumni Association will meet for their luncheons Wednesday at 1 p. m.

TENNESSEE

Course in Pediatrics.—The University of Tennessee College of Medicine, Memphis, in cooperation with Le Bonheur Children's Hospital, will offer a postgraduate course in pediatrics May 20-22. The course, under the direction of Dr. F. Thomas Mitchell, chief of the division of pediatrics at the university and chief of staff at the hospital, will be limited to 20 physicians. Information may be obtained from the University of Tennessee Postgraduate Department, 4 S. Dunlap, Memphis.

TEXAS

Meetings on Cancer.—For May 15-16 the University of Texas M. D. Anderson Hospital for Cancer Research, Houston, has scheduled the annual symposium and the Cancer Pathology and Radiology Conference, which will be presented with the cooperation of the University of Texas Postgraduate School of Medicine. The South Central Section of the College of American Pathologists will participate. The session on cytological studies is being prepared by Dr. Robert C. Mellors, Sloan-Kettering Institute for Cancer Research, Memorial Center for Cancer and Allied Diseases, New York. The pathology and radiology conference will be conducted by Dr. David A. Wood, Cancer Research Institute of the University of California Medical School, San Francisco, and Dr. W. Edward Chamberlain, Temple University Hospital, Philadelphia. The Bertner Foundation lecture will be given at the banquet Friday by Dr. Charles B. Huggins, University of Chicago School of Medicine, on "Control of Human Cancer by Hormonal Methods." All meetings will be held at the Shamrock. Information may be obtained from Dr. William O. Russell, 2310 Baldwin St., Houston 6.

WASHINGTON

Clinic Day for General Practitioners.—At the annual general practice clinic day for the Washington State Chapter of the Academy of General Practice, May 15, at the University of Washington, Seattle, Dr. Carl C. Pfeiffer, professor of pharmacology, University of Illinois College of Medicine, Chicago, at 10:45 a. m. will discuss "Convulsant and Anticonvulsant Drugs," and at the dinner, 7 p. m. in the Washington Athletic Club, will speak on "Clinical Use of Autonomic Drugs." Other presentations, all by Seattle physicians, include:

Therapy and Management of the Patient with Anemia, Quin B. DeMarsh.
Rational Use of Placebos in Therapy, Thomas H. Holmes.
Rational Uses of Corticotropin and Cortisone, John R. Hogness.
Home Care of Acute Poliomyelitis, Robert D. Ray.
New Antibiotics, William M. M. Kirby.
Therapy and Management of the Patient with Urinary Tract Infection, Donald F. McDonald.
Management of Respiratory Infections and Their Complications in Children, Frederic C. Moll.

WEST VIRGINIA

Camp for Diabetic Children.—West Virginia's Camp for Diabetic Children, Camp Kno-Koma, will be held May 29 to June 6 at Carbide and Carbon Chemicals Company's "Camp Camelot," on Blue Creek, about 45 miles from Charleston. The camp, described as "the nation's only entirely free diabetic camp," is cosponsored by the West Virginia Diabetes Association and the Charleston Diabetes Association and is supervised by medical, nursing, and dietetic personnel. All diabetic children between the ages of 7 and 15 are urged to attend the camp, and physicians throughout the state are requested to encourage their young diabetic patients to enroll for the full camping period. Information may be obtained by addressing Camp Kno-Koma, 1115 Quarrier St., Charleston 1.

GENERAL

Meeting of Medical Examiners.—The Associated Diplomates of the National Board of Medical Examiners will hold their annual meeting at the Belmont Plaza Hotel, New York, June 3, 3 p. m.

Meeting on Arteriosclerosis.—The American Society for the Study of Arteriosclerosis, which will hold its annual meeting Nov. 1-2 in Chicago, invites the submission of factual 200 word abstracts on papers for the meeting by May 30. Dr. Louis N. Katz, Michael Reese Hospital, Chicago 16, is program chairman, and Dr. O. J. Pollak, P. O. Box 228, Dover, Del., is secretary.

New Psychiatric Publication.—A new quarterly, entitled *Acta Psychotherapeutica, Psychosomatica et Orthopaedagogica,* which will be published under the editorship of Drs. Franz G. Alexander, Chicago, H. Flanders Dunbar, New York, and several European colleagues, will contain contributions in French, German, and English. Correspondence should be addressed to the editorial office: B. Stokvis, Psychiatric University Clinic, Leyden-Oegstgeest, Netherlands.

Aero Medical Meeting.—The annual meeting of the Aero Medical Association will be held at the Biltmore Hotel in Los Angeles, May 11-13, under the presidency of Dr. William R. Stovall, Washington, D. C. Dr. John A. Tamisiea, Omaha, will serve as moderator for a panel on pilot aging. Dr. Raymond B. Allen, chancellor of the University of California at Los Angeles, will be guest speaker at the banquet Wednesday, and on the same evening Rear Adm. Bertram Groesbeck Jr. (MC) U.S.N., Washington, D. C., will be installed as president.

Urologists Meet in St. Louis.—The American Urological Association will hold its annual meeting at the Hotel Jefferson, St. Louis, May 11-14, under the presidency of Dr. George F. Cahill, New York. The scientific sessions will open at 9 a. m. Monday with a panel discussion on pediatric urology, with Dr. Meredith F. Campbell, New York, as moderator. Thursday morning Dr. Reed M. Nesbit, Ann Arbor, Mich., will serve as moderator for a panel on urinary lithiasis. Motion pictures will be shown Monday and Wednesday at 8 a. m. and Tuesday at 2 p. m. The presidential address, "Medical Education and Training in Urology," Wednesday, 2 p. m., will precede the Ramon Guiteras Lecture on "Recent Advances in Experimental and Clinical Cancer Chemotherapy" by Dr. Alfred A. Gellhorn, New York. The banquet, Wednesday, 8 p. m., will follow the president's cocktail party. The annual golf tournament will be held Monday, 1 p. m., at Norwood Hills Country Club.

Pediatric Program.—The physical and mental health section of the National Catholic Kindergarten Association, which will hold its biennial convention at the Hotel Sherman, Chicago, May 15-16, will present the following program Friday, 2:30 p. m. in the Louis XVI Room:

Control of Communicable Diseases, Edward A. Piszcek, Forest Park, Ill.
Mental Hygiene Problems of Childhood, Eugene L. Slotkowski, Chicago.
Prevention and Correction of Children's Speech Disorders, Frances P. Gaines, Ph.D., Chicago.
The Teacher's Personality and Mental Health, Very Rev. Msgr. William J. Gorman, Chicago.

Directory of Allergists.—Dr. Egon Bruun, president of the Danish Society for Allergological Research, is editor of the new directory "Who Is Who in Allergy" to be published under the auspices of the International Association of Allergology. The looseleaf handbook will contain lists of all national allergy associations and their members, showing the education and training, qualifications, posts of special responsibility, membership, and official positions of each member together with his professional address and hours of consultation. The publisher is Ejnar Munksgaard, International Bookseller & Publisher Limited, 6 Norregade, Copenhagen K, Denmark.

Laurentian Hormone Conference.—The Laurentian Hormone Conference of the American Association for the Advancement of Science will hold its annual meeting at Mont Tremblant Lodge, Mont Tremblant, Quebec, Canada, Sept. 6-11. Interested investigators and specialists in the hormone field may obtain application blanks from the Committee on Arrangements, 222 Maple Ave., Shrewsbury, Mass. Application blanks must be received no later than May 15. Topics for discussion include: nervous system-hormone interrelationships, thyroid hormone physiology and biochemistry, comparative endocrinology, protein hormones, the role of hormones in blood and blood forming organs, and aspects of clinical endocrinology.

Meeting of Southeastern Allergists.—The Southeastern Allergy Association will hold its annual meeting May 15-16 at the Andrew Jackson Hotel, Nashville, Tenn. Clinical cases will be presented Friday 1:30 p. m. in Classroom B, Vanderbilt University School of Medicine. Saturday morning Dr. M. Murray Peshkin, New York, president, American College of Allergists, will speak on "Allergy in Our Times," and Dr. Ben Z. Rappaport, Chicago, president of the American Academy of Allergy, will discuss "Psychogenic Factors in the Practice of Allergy." Dr. C. Raymond Arp, Atlanta, will serve as moderator for a symposium on "Allergy of the Nervous System" at 3 p. m. Saturday, in which he will participate with Drs. Susan C. Dees, Durham, N. C., and Katharine B. MacInnis, Columbia, S. C.

Fellowships Available.—The National Society for Crippled Children and Adults announces that, under the joint sponsorship of Alpha Gamma Delta, international women's fraternity, and the society, 20 fellowships, covering tuition and maintenance, will be offered to counselors, teachers, and other professional persons. The program for 1953 will place emphasis on the needs of personnel working in the field of educational training, counseling, and vocational guidance who deal with problems of the handicapped student. Six hours of credit in education will be granted for completion of the four week training program, which will be under the auspices of the school of education of New York University-Bellevue Medical Center. Information may be secured from the National Society for Crippled Children and Adults, 11 S. La Salle St., Chicago 3.

Spectacles For the Needy.—New Eyes for the Needy, Inc., sponsored by the Short Hills (N. J.) Junior Service League, has appealed for discarded spectacle frames and gold and silver scrap. This nonprofit organization, which is endorsed by the National Society for the Prevention of Blindness and by the Essex County (N. J.) Medical Society, provides new prescription glasses for those who cannot afford them; maintains worldwide distribution of usable frames; and, nationally, provides funds for prescription glasses and artificial eyes distributed through hospitals, clinics, and reliable charitable outlets. A needy person may apply directly to the organization or to a hospital, clinic, or certified welfare agency, that has been allotted a quota by the charity. After screening and examination, he is referred to an optician for glasses, which are paid for by New Eyes for the Needy, Inc. Nearly 70,000 persons have been helped since 1933.

Meeting on Mental Deficiency.—The annual meeting of the American Association on Mental Deficiency will be held at the Hotel Statler, Los Angeles, May 12-16, under the presidency of Bertha M. Luckey, Ph.D., Cleveland. On Tuesday educational tours are scheduled to Los Angeles county and city schools for the mentally retarded and the physically handicapped, including the Pacific Colony in Spadra, Calif. Wednesday morning Dr. William W. Fox, superintendent, Lincoln State School and Colony, Lincoln, Ill., will give an address and Dr. George Tarjan, superintendent, Pacific Colony, will speak on medicine and psychiatry. "Some Trends in the Field of Mental Deficiency" will be discussed at the luncheon meeting Wednesday by Dr. Henry C. Schumacher, medical director, U. S. Public Health Service, Berkeley, Calif. Dr. Frank F. Tallman, commissioner of mental hygiene, Sacramento, Calif., will speak on "Mental Deficiency, a Problem to the Home and to the Community" at the public meeting Wednesday, 8 p. m. Dr. Karl M. Bowman, superintendent, the Langley Porter Clinic, San Francisco, will address the luncheon meeting Saturday, 12:30 p. m. on "A Psychiatrist's View on Mental Deficiency."

Rehabilitation Mission to Korea.—Dr. Howard A. Rusk, director, Institute of Physical Medicine and Rehabilitation, New York University–Bellevue Medical Center, recently headed a rehabilitation mission to Korea. The mission, which was organized by the American-Korean Foundation, of which Milton S. Eisenhower, D.Sc., State College, Pa., is chairman, visited Korean military and civilian hospitals, giving particular attention to Koreans in need of prosthetic devices, physical therapy, and vocational rehabilitation. In keeping with the foundation's policy of helping Koreans to help themselves, the mission made plans for Korean physicians, technicians, and nurses to be trained in the latest techniques of medical rehabilitation. Members of the mission included Mrs. Rusk, a social worker representing the International Society for the Welfare of Cripples; Mrs. Bernard F. Gimbel, a member of the board of directors of the foundation; Mr. Leonard W. Mayo, New York, executive director, Association for the Aid of Crippled Children; Mr. Eugene J. Taylor, staff of the *New York Times* and of the National Society for Crippled Children and Adults; and Mr. Palmer Bevis, executive director of the foundation. The mission, which left Honolulu March 7, spent a week in Korea, returning to the United States after a three day stopover in Tokyo for conferences with U. S. military medical officers and representatives of the Japanese government and voluntary agencies concerned with rehabilitation. The American-Korean Foundation was organized with the long-range objective of bringing the peoples of Korea and the United States closer together. The Rusk mission is the first of several that the foundation will send to Korea, and on their findings future projects will be developed. The foundation is nonpolitical, nonsectarian, nonprofit, and is not endowed but is dependent on contributions from American citizens. Its offices are at 303 Lexington Ave., New York 16.

CORRECTION

Dr. Reynolds' Address.—In the annual convention number of THE JOURNAL, April 11, 1953, among the scientific exhibits, in the last item, left hand column, page 1346, the address of Dr. Beverley R. Reynolds should read New York University, Postgraduate Medical School, New York, instead of Roosevelt Hospital, New York, as it was printed. Dr. Reynolds is on the resident staff of Dr. J. William Hinton of the Postgraduate Medical School.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1953 Annual Session, New York, June 1-5.

1953 Clinical Session, St. Louis, Dec. 1-4.

1954 Annual Session, San Francisco, June 21-25.

1954 Clinical Session, Miami, Florida, Nov. 30-Dec. 3.

AERO MEDICAL ASSOCIATION, Biltmore Hotel, Los Angeles, May 11-13. Dr. Thomas H. Sutherland, P. O. Box 26, Marion, Ohio, Secretary.

AMERICAN ACADEMY OF TUBERCULOSIS PHYSICIANS, Hotel Roosevelt, New York, May 30. Dr. Oscar S. Levin, P. O. Box 7011, Denver 6, Secretary.

AMERICAN ASSOCIATION ON MENTAL DEFICIENCY, Hotel Statler, Los Angeles, May 12-16. Dr. Neil A. Dayton, P. O. Box 96, Willimantic, Conn., Secretary.

AMERICAN BLOOD IRRADIATION SOCIETY, Waldorf-Astoria, New York, May 30-31. Dr. H. T. Lewis, 1241 Peermont Ave., Pittsburgh, Secretary.

AMERICAN COLLEGE OF CARDIOLOGY, Hotel Statler, Washington, D. C., June 7-9. Dr. Philip Reichert, 480 Park Ave., New York 22, Secretary.

AMERICAN COLLEGE OF CHEST PHYSICIANS, Hotel New Yorker, New York, May 28-31. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Executive Director.

AMERICAN DERMATOLOGICAL ASSOCIATION, Lake Placid Club, Lake Placid, N. Y., June 9-13. Dr. Louis A. Brunsting, 102 Second Ave. S.W., Rochester, Minn., Secretary.

AMERICAN DIABETES ASSOCIATION, Hotel Commodore, New York, May 30-31. Dr. John A. Reed, 11 West 42d St., New York 36, Secretary.

AMERICAN GERIATRICS SOCIETY, Hotel Commodore, New York, May 28-30, Dr. Malford W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

AMERICAN GYNECOLOGICAL SOCIETY, Lake Placid Club, Lake Placid, N. Y., June 15-17. Dr. John I. Brewer, 104 South Michigan Ave., Chicago, Secretary.

AMERICAN MEDICAL WOMEN'S ASSOCIATION, Barbizon-Plaza Hotel, New York, May 29-31. Dr. Elizabeth R. Fischer, 10848 South Fairfield Ave., Chicago 43, Secretary.

AMERICAN NEUROLOGICAL ASSOCIATION, Hotel Claridge, Atlantic City, N. J., June 15-17. Dr. H. Houston Merritt, 710 West 168th St., New York 32, Secretary.

AMERICAN OPHTHALMOLOGICAL SOCIETY, The Homestead, Hot Springs, Va., May 28-30. Dr. Maynard C. Wheeler, 30 West 59th St., New York 19, Secretary.

AMERICAN ORTHOPEDIC ASSOCIATION, The Homestead, Hot Springs, Va., June 20-July 1. Dr. George O. Eaton, 4 East Madison St., Baltimore 2, Secretary.

AMERICAN PROCTOLOGIC SOCIETY, Hotel Statler, Boston, June 10-13. Dr. Stuart T. Ross, 131 Fulton Ave., Hempstead, N. Y., Secretary.

AMERICAN RHEUMATISM ASSOCIATION, Waldorf-Astoria, New York, May 28-29. Dr. William H. Kammerer, 33 East 61st St., New York 21, Secretary.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY, Henry Hudson Hotel, New York, May 25-31. Dr. Walter W. Williams, 20 Magnolia Terrace, Springfield 8, Mass., Secretary.

AMERICAN THERAPEUTIC SOCIETY, The Biltmore, New York, May 28-31. Dr. Oscar B. Hunter Jr., 915 Nineteenth St. N.W., Washington 6, D. C., Secretary.

AMERICAN TRUDEAU SOCIETY, Hotel Statler, Los Angeles, May 18-22. Dr. John D. Steele, 1790 Broadway, New York 19, Secretary.

AMERICAN UROLOGICAL ASSOCIATION, Hotel Jefferson, St. Louis, May 11-14. Dr. Charles H. deT. Shivers, Boardwalk National Arcade Bldg., Atlantic City, N. J., Secretary.

CALIFORNIA MEDICAL ASSOCIATION, Biltmore Hotel, Los Angeles, May 24-28. Dr. Albert C. Daniels, 450 Sutter St., San Francisco 8, Secretary.

CATHOLIC HOSPITAL ASSOCIATION OF THE UNITED STATES AND CANADA, Kansas City, Mo., May 25-28. Rev. John J. Flanagan, S.J., 1438 South Grand Blvd., St. Louis 4, Director.

CONFERENCE OF PRESIDENTS AND OTHER OFFICERS OF STATE MEDICAL ASSOCIATIONS, New York, May 31. Mr. Thomas R. O'Brien, 634 North Grand Blvd., St. Louis 3, Secretary.

GEORGIA, MEDICAL ASSOCIATION OF, Savannah, May 10-13. Dr. David H. Poer, 875 West Peachtree St. N.E., Atlanta, Secretary.

IDAHO STATE MEDICAL ASSOCIATION, Sun Valley, June 14-17. Dr. Robert S. McKean, 305 Sun Bldg., Boise, Secretary.

ILLINOIS STATE MEDICAL SOCIETY, Hotel Sherman, Chicago, May 19-22. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

MAINE MEDICAL ASSOCIATION, Eastland Hotel, Portland, June 21-24. Mr. W. Mayo Payson, 142 High St., Portland 3, Executive Secretary.

MASSACHUSETTS MEDICAL SOCIETY, Hotel Statler, Boston, May 19-21. Dr. Robert W. Buck, 22 The Fenway, Boston 15, Acting Secretary.

MEDICAL LIBRARY ASSOCIATION, New House Hotel, Salt Lake City, June 16-19 Miss Louise C. Lage, Lilly Research Laboratories, 740 South Alabama St., Indianapolis 6, Secretary.

MINNESOTA STATE MEDICAL ASSOCIATION, Hotel St. Paul, St. Paul, May 18-20. Dr. B. B. Souster, 496 Lowry Medical Arts Bldg., St. Paul 2, Secretary.

MISSISSIPPI STATE MEDICAL ASSOCIATION, Biloxi, May 11-14. Mr. Roland B. Kennedy, 508 First Federal Bldg., Jackson, Executive Secretary.

NATIONAL TUBERCULOSIS ASSOCIATION, Statler and Biltmore hotels, Los Angeles, May 18-22. Mr. Kemp D. Battle, 1790 Broadway, New York 19, Secretary.

NEBRASKA STATE MEDICAL ASSOCIATION, Paxton Hotel, Omaha, May 11-14. Dr. R. B. Adams, 1315 Sharp Bldg., Lincoln 8, Secretary.

NEW JERSEY, MEDICAL SOCIETY OF, Haddon Hall, Atlantic City, May 17-20. Dr. Marcus H. Greifinger, 315 West State St., Trenton 8, Secretary.

NORTH CAROLINA, MEDICAL SOCIETY OF THE STATE OF, Hotel Carolina, Pinehurst, May 10-13. Dr. Millard D. Hill, 203 Capital Club Bldg., Raleigh, Secretary.

NORTH DAKOTA STATE MEDICAL ASSOCIATION, Clarence Parker Hotel, Minot, May 9-12. Dr. E. H. Boerth, Box 1198, Bismarck, Secretary.

OGDEN SURGICAL SOCIETY, Orpheum Theater, Ogden, Utah, May 20-22. Dr. Irwin B. McQuarrie, 401 Eccles Bldg., Ogden, Utah, President.

PACIFIC COAST OTO-OPHTHALMOLOGICAL SOCIETY, Los Angeles, May 24-28, Dr. H. P. House, 1136 West 8th St., Los Angeles 14, Secretary.

SOCIETY FOR INVESTIGATIVE DERMATOLOGY, Belmont Plaza Hotel, New York, May 30-31. Dr. Herman Beerman, 255 South 17th St., Philadelphia 3, Secretary.

SOCIETY FOR VASCULAR SURGERY, Hotel Pierre, New York, May 31. Dr. George D. Lilly, 25 S.E. Second Ave., Miami 32, Fla., Secretary.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION, Alex Johnson Hotel, Rapid City, June 14-16. Dr. G. I. W. Cottam, 300 First National Bank Bldg., Sioux Falls, Secretary.

SOUTHEASTERN ALLERGY ASSOCIATION, Andrew Jackson Hotel, Nashville, Tenn., May 15-16. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 1, S. C., Secretary.

SOUTHERN OREGON MEDICAL SOCIETY, Oregon Caves Chateau, Oregon Caves, Ore., June 10. Dr. R. Ray Johnson, Grants Pass, Ore., Secretary.

SOUTHWEST ALLERGY FORUM, Hotel Muehlebach, Kansas City, Mo., June 14-16. Dr. Frederic Speer, 2601 Parallel Ave., Kansas City 4, Kans., Secretary.

STUDENT AMERICAN MEDICAL ASSOCIATION, Edgewater Beach Hotel, Chicago, June 15-17. Mr. Russell F. Staudacher, 535 North Dearborn St., Chicago 10, Executive Secretary.

THE ENDOCRINE SOCIETY, Hotel Statler, New York, May 28-30. Dr. Henry H. Turner, 1200 North Walker St., Oklahoma City 3, Secretary.

UPPER PENINSULA MEDICAL SOCIETY, Escanaba, Mich., June 19-20. Dr. N. L. Lindquist, 1103 Ludington St., Escanaba, Mich., Secretary.

WESTERN BRANCH, AMERICAN PUBLIC HEALTH ASSOCIATION, Biltmore Hotel, Los Angeles, June 10-13. Mrs. L. Amy Darter, Division of Laboratories, State Department of Public Health, Berkeley, Calif., Secretary.

WESTERN SOCIETY OF ELECTRO-ENCEPHALOGRAPHY, Hotel Statler, Los Angeles, May 9-10. Dr. Sylvester N. Berens, 902 Boren Ave., Seattle, Secretary.

WYOMING STATE MEDICAL SOCIETY, Henning Hotel, Casper, June 11-13. Dr. Glenn W. Koford, P. O. Box 1252, Cheyenne, Secretary.

FOREIGN

BRITISH MEDICAL ASSOCIATION, Cardiff, S. Wales, July 13-17. Dr. A. MaCrae, B. M. A. House, Tavistock Square, London W.C.1, England, Secretary.

CANADIAN MEDICAL ASSOCIATION, Winnipeg, Manitoba, Canada, June 15-19. Dr. T. C. Routley, 135 St. Clair Avenue W., Toronto 5, Ontario, Canada, General Secretary.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Chateau Frontenac, Quebec, Canada, October 26-29. Dr. A. William Friend, 515 Nome Ave., Akron 20, Ohio, Chairman, Program Committee.

CONGRESS OF INTERNATIONAL LEAGUE AGAINST RHEUMATISM, Geneva and Zurich, Switzerland, Aug. 24-29. For information write: Dr. W. Tegner, The London Hospital, London E.1, England.

CONGRESS OF THE INTERNATIONAL SOCIETY OF ANGIOLOGY, Lisbon, Portugal, Sept. 18-20. Dr. Henry Haimovici, 105 East 90th St., New York 28, N. Y., U. S. A., Secretary.

CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY, Lisbon, Portugal, Sept. 14-20. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

EUROPEAN CONGRESS OF ALLERGOLOGY, Copenhagen, Denmark, May 20-23. Dr. Egon Brunn, Gersonavej 8, Hellerup, Copenhagen, Denmark, Secretary General.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS OF AUDIOLOGY, Leiden, Netherlands, June 5-6. Dr. H. A. E. ve Dishoeck, Leiden University, Leiden, Netherlands, President.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Boston, Mass., U. S. A., Aug. 18-21. Dr. Robert S. Schwab, Massachusetts General Hospital, Boston 14, Mass., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF THE EUROPEAN SOCIETY OF HAEMATOLOGY, Amsterdam, Holland, Sept. 8-12. Dr. M. C. Verloop, Maliesingle 15, Utrecht, Holland, Secretary.

INTERNATIONAL CONGRESS ON GENETICS, Bellagio, Italy, August 4. Prof. C. Barigozzi, Instituto de Genetica, Universita de Milano, 10 via Celoria, Milan, Italy, Secretary.

INTERNATIONAL CONGRESS OF GYNECOLOGY, Geneva, Switzerland, July 21-26, 1954. Dr. Maurice Fabre, 1, rue Jules-Lefebore, Paris IXe, France, General Secretary.

INTERNATIONAL CONGRESS OF HIPPOCRATIC MEDICINE, Evian, France, Sept. 3-6. Prof. P. Delore, 13 rue Jarente, Lyons, France, Secretary-General.

INTERNATIONAL CONGRESS FOR HISTORY OF SCIENCE, Jerusalem, Israel, August 3-7. Prof. F. S. Bodenheimer, Hebrew University, Jerusalem, Israel, President.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Sao Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U.S.A., Secretary-General.

INTERNATIONAL CONGRESS OF LOGOPEDICS AND PHONIATRICS, Milan and Stresa, Italy, Sept. 1-7. Dr. Deso A. Weiss, 115 East 86th St., New York 28, N. Y., U. S. A., General Secretary.

INTERNATIONAL CONGRESS ON MEDICAL LIBRARIANSHIP, London, England, July 20-25. Mr. W. R. LeFanu, % London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1, England, Chairman.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF MICROBIOLOGY, Rome, Italy, Sept. 6-12. For information write: Dr. V. Puntoni, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS ON OBSTETRICS AND GYNECOLOGY, Geneva, Switzerland, July 26-31, 1954. Prof. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

INTERNATIONAL CONGRESS OF OTORHINOLARYNGOLOGY, Amsterdam, Netherlands, June 8-13. Dr. W. H. Struben, J. J. Viottastraat 1, Amsterdam, Netherlands, Secretary.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Havana, Cuba, Oct. 12-17. Prof. Felix Hurtado, 5a Avenue 124, Miramar, Havana, Cuba, President.

INTERNATIONAL CONGRESS OF RADIOLOGY, Copenhagen, Denmark, July 19-25. Professor Flemming Norgaard, 10 Oster Voldgade, Copenhagen K, Denmark, Secretary General.

INTERNATIONAL CONGRESSES OF TROPICAL MEDICINE AND MALARIA, Istanbul, Turkey, Aug. 28-Sept. 4. Professor Dr. Ihsan Sükrü Aksel, Tunel Meydam, Beyoglu, Istanbul, Turkey, General Secretary.

INTERNATIONAL CONVENTION OF X-RAY TECHNICIANS, Royal York Hotel, Toronto, Canada, June 28-July 2. For information write: Miss Beatrice Hurley, R.T., Registrar, St. Catherine Hospital, East Chicago, Ind., U. S. A.

INTERNATIONAL FERTILITY ASSOCIATION, Henry Hudson Hotel, New York, N. Y., U. S. A., May 25-31. Dr. Abner I. Weisman, 1160 Fifth Avenue, New York 29, N. Y., U. S. A., Associate Secretary General.

INTERNATIONAL GERONTOLOGICAL CONGRESS, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

INTERNATIONAL GYNAECOLOGICAL MEETING, Paris, France, May 22-23. For information write: Dr. Jacques Courtois, 1, rue Racine, St. Germain-en-Laye, Seine et Oise, France.

INTERNATIONAL HOSPITAL CONGRESS, London, England, May 25-30. Capt. J. E. Stone, 10 Old Jewry, London, EC2, England, Hon. Secretary.

INTERNATIONAL LEPROSY CONGRESS, Madrid, Spain, Oct. 3-10. Dr. Felix Contreras, Moreto 15, Madrid, Spain, Secretary.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Montreal, Canada, Aug. 31-Sept. 4. Dr. A. S. V. Burgen, Dept. of Physiology, McGill University, Montreal, Canada, Secretary.

INTERNATIONAL PSYCHO-ANALYTICAL CONGRESS, Bedford College, Regent's Park, London N.W.1, England, July 26-30. Dr. Ruth S. Eissler, 285 Central Park West, New York 24, N. Y., Hon. Secretary.

INTERNATIONAL SOCIETY FOR THE STUDY OF BIOLOGICAL RHYTHMS, Basle, Switzerland, Sept. 18-19. For information write: Prof. Dr. F. Georgi, Neurologische Universitats-Poliklinik, Socinstrasse 55, Basle, Switzerland.

INTERNATIONAL VETERINARY CONGRESS, Stockholm, Sweden, Aug. 9-15. Prof. Axel Isaksson, Institute of Veterinary Medicine, Stockholm 50, Sweden, Secretary.

PACIFIC SCIENCE CONGRESS, Quezon City and Manila, Philippines, Nov. 16-28. Dr. Patrocinio Valenzuela, College of Pharmacy, University of the Philippines, Quezon City, Philippines, Secretary-General.

PAN AMERICAN CONGRESS OF THE MEDICAL PRESS, Buenos Aires, Argentine, July 12-16. Secretaria del Congress, 763 Uriburu, Buenos Aires, Argentine.

WORLD CONFERENCE ON MEDICAL EDUCATION, British Medical Association House, Tavistock Square, W.C.1, London, England, Aug. 22-29. Secretariat: World Medical Association, 2 East 103d St., New York 29, N. Y., U. S. A.

WORLD CONGRESS OF THE WORLD CONFEDERATION FOR PHYSICAL THERAPY, London, England, Sept. 7-12. Miss M. J. Neilson, Chartered Society of Physiotherapy, Tavistock House, South, Tavistock Square, London, W.C.1, England, Secretary.

WORLD MEDICAL ASSOCIATION, The Hague, Netherlands, Aug. 31-Sept. 7. Dr. Louis H. Bauer, 2 East 103d St., New York 29, N. Y., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* All centers where there are five or more candidates. June 22-24 and Sept. 8-10 (Part I only). Candidates may file applications at any time, but the National Board must receive them at least six weeks before the date of the examination they wish to take. *Part III.* June 9-26. Examination will be held in each of 31 centers having five or more eligible candidates. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 17. Final date for filing applications was January 17. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: All candidates must now pass a written examination. *Written.* Various centers, Sept. 3. *Oral.* Philadelphia, Oct. 16-18. To be eligible, candidate must complete 36 months of training before Oct. 1. Final date for filing applications was May 1. Exec. Sec., Miss Janet Newkirk, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* New York City, May 27-29. The closing date for acceptance of applications for oral examinations was January 2 except for candidates in military or Naval Service. *Oral.* San Francisco, Sept. 21-23, Chicago, Nov. 30-Dec. 2. The closing date for acceptance of applications for the San Francisco and Chicago oral examination was April 1. *Oral Examinations in the Subspecialties.* Allergy, New York City, June. Cardiovascular Disease, New York City, May 27, and Los Angeles, May. The closing date for acceptance of applications was February 1. *Written.* October 19. The closing date for acceptance of applications is May 1. Exec. Sec.-Treas., Dr. William A. Werrell, 1 West Main St., Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June 1953. Final date for filing application for the oral examination was Jan. 15, 1953. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, Kingshighway and Euclid Ave., St. Louis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Oral and Pathological, Part II.* Chicago, May 17-24. Final date for filing application was Feb. 1. Sec., Dr. R. L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Practical.* New York City, June 6-10; Chicago, Oct. 5-9. *Written.* Various Centers, January 1954. Final date for filing applications is July 1. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 5-9. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Philadelphia, May 1-3; Ann Arbor, June 26-27. Place undecided, Oct. 9-11 (tentative); Indianapolis, November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Oral and Written.* May 30-31. Final date for filing applications was March 31. Sec., Dr. Robert L. Bennett, 30 N. Michigan Blvd., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: New Orleans, May 9-11. Final date for receipt of case reports for the spring examination was January 1. Final date for receipt of case reports for the fall examination (October-November) is June 1 of each year. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8, Mo.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* For candidates in proctology and ano-rectal surgery. May 9, Kansas City, Minneapolis, Philadelphia and San Francisco. The examination will be in anatomy, physiology, biochemistry and pathology and will be both oral and written. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

DEATHS

Hussey, Raymond ⊕ Chicago, scientific director of the Council on Industrial Health of the American Medical Association; died in St. Luke's Hospital April 15, aged 69. Dr. Hussey was born in Greensboro, N. C., Dec. 23, 1883. Following graduation from the University of Maryland School of Medicine, Baltimore, in 1911, Dr. Hussey was a resident physician at Municipal Tuberculosis Hospital and the Maryland Tuberculosis Sanatorium in Baltimore and in 1916-1917 was an assistant in pathology and later instructor in medicine at Johns Hopkins University School of Medicine, Baltimore. He was an associate professor of medicine at the University of Maryland School of Medicine, College of Physicians and Surgeons, from 1937 to 1945, when he became dean, professor of preventive medicine, and organizer of the School of Occupational Health at the Wayne University Medical Science Center in Detroit. During World War I he entered the medical corps of the U. S. Army as a lieutenant, rose to the rank of major, and from 1919 to 1924 was a lieutenant colonel in the medical reserve corps of the U. S. Army. In 1918-1919 he was acting chairman and from 1918 to 1921 vice-chairman of the division of medical sciences of the National Research Council and at one time special investigator of Maryland Tuberculosis Commission. In 1943 he became a lieutenant colonel in the medical corps of the U. S. Army and was commanding officer and scientific director of the Army Industrial Hygiene Laboratory at Johns Hopkins University School of Hygiene and Public Health. At different times he was an associate in pathology and biophysics at the Rockefeller Institute for Medical Research in New York, assistant professor of pathology at Cornell University Medical College, New York, and associate professor and professor of pathology at Yale University Medical School in New Haven, Conn. While practicing in Baltimore, Dr. Hussey was on the staffs of the Union Memorial Hospital, Church Home and Infirmary, University Hospital, St. Joseph's Hospital, and the Baltimore City Hospital. He was a specialist certified by the American Board of Preventive Medicine and Public Health; a fellow and founder member of the American Academy of Compensation Medicine; a consultant to the joint committee on occupational diseases of the chest, the Industrial Medical Association, and the American College of Chest Physicians; a member of the American Society for Experimental Pathology and the Sigma Xi Society; and a fellow of the American Association for the Advancement of Science and the American College of Physicians. From 1938 to 1945 he was a member of the committee on industrial health of the Medical and Chirurgical Faculty of Maryland, serving as vice-chairman, 1938-1939, and later chairman. He served on committees for the American Society of Mechanical Engineers, the Acoustical Society of America, Midwestern Air Pollution Prevention Association, Department of Smoke Abatement of the City of Chicago, Welfare Council of Metropolitan Chicago, Acoustical Materials Association, National Noise Abatement Council, National Social Welfare Assembly, and the Air and Refrigeration Corporation. In 1942 he was a member of the medical committee of the Industrial Hygiene Foundation of America, Mellon Institute, Pittsburgh, and in 1943 a member of the professional advisory committee on physical restoration for the office of vocational rehabilitation, Federal Security Agency. In 1927 Dr. Hussey received the honorary degree of master of arts from Yale. In 1941 he became a member of the Council on Industrial Health of the American Medical Association, serving as vice-chairman, and as chairman of the committee on workmen's compensation, a position he had to relinquish in 1950 when he joined the staff of the Council.

Berry, Gordon ⊕ Worcester, Mass.; born March 7, 1880; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1906; at one time on the faculty of Harvard Medical School in Boston; specialist certified by the American Board of Otolaryngology; member of the Advisory Committee on Audiometers and Hearing Aids of the Council on Physical Medicine and Rehabilitation of the American Medical Association; member of the American Academy of Ophthalmology and Otolaryngology and on its committee on conservation of hearing; formerly a board member of the Volta Speech Association; member and past president of the American Laryngological Association, American Otological Society, New England Oto-laryngological Society, and the American Broncho-Esophagological Association; from 1924 to 1927 president of the American Federation of Organizations for the Hard of Hearing; member of the American Laryngological, Rhinological and Otological Society; founder of the Worcester Hearing League and honorary president since its inception; served during World War I; on June 8, 1952, received a doctor of science degree from Amherst (Mass.) College; member of the board of trustees of the Clark School for the Deaf in Northampton, and in 1942 chairman of the board of trustees of Worcester Medical Library; affiliated with Hahnemann Hospital, Belmont Hospital, Fairlawn Hospital, and the Memorial Hospital, where he died March 17, aged 73, of cerebral hemorrhage.

Block, Walter Ernest ⊕ Auburn, N. Y.; Universität Köln (Cologne) Medizinische Fakultät, Köln, Prussia, Germany, 1923; affiliated with the Mercy Hospital and the Auburn City Hospital, where he died Jan. 4, aged 54, of coronary thrombosis.

Blount, Anna Ellsworth ⊕ Oak Park, Ill.; Northwestern University Woman's Medical School, Chicago, 1897; past president of the Medical Women's National Association; served on the staffs of the Women's and Children's Hospital in Chicago and the West Suburban Hospital; died in Wisconsin Feb. 12, aged 81, of senility.

Brown, Cecil Hooper ⊕ Jackson, Tenn.; Washington University School of Medicine, St. Louis, 1936; served overseas during World War II and received the Bronze Star for meritorious achievement; local surgeon for the Illinois Central Railroad; on the staff of the Jackson-Madison County General Hospital; died Feb. 6, aged 44, of coronary occlusion.

Chizik, John Joseph ⊕ Bayonne, N. J.; Georgetown University School of Medicine, Washington, D. C., 1936; resigned as a lieutenant colonel in the medical corps of the U. S. Army on Nov. 15, 1946; on the staff of the Bayonne Hospital; died Jan. 25, aged 42, of an accidental gunshot wound.

Coogle, Charles Perry, Houston, Texas; University of Louisville (Ky.) Medical Department, 1911; formerly assistant professor of malariology at the University of Texas School of Medicine in Galveston; at one time malariologist for the U. S. Public Health Service; served as director of malaria investigations for the state department of health; affiliated with the M. D. Anderson Hospital; died in the Hermann Hospital Feb. 21, aged 66, of cerebral hemorrhage.

Davenport, Frank Noble ⊕ Moline, Ill.; Northwestern University Medical School, Chicago, 1910; affiliated with Lutheran and Moline Public hospitals; died Feb. 3, aged 67, of coronary thrombosis.

Ellwood, Walter Willfel ⊕ Los Angeles; Marquette University School of Medicine, Milwaukee, 1931; member of the American Trudeau Society; served during World War II; affiliated with City of Hope, Duarte, Behrens Memorial Hospital, and Glendale Sanitarium and Hospital in Glendale, and the Temple Hospital; died Feb. 7, aged 46, of acute coronary thrombosis.

Fiedling, Michael William ⊕ Norway, Mich.; Northwestern University Medical School, Chicago, 1928; president of the Dickinson-Iron Counties Medical Society; served on the board of education of Vulcan; president of the board of Pinecrest Sanatorium in Powers; affiliated with Penn Hospital, where he died Feb. 6, aged 52, of cerebral hemorrhage.

⊕ Indicates Member of the American Medical Association.

Fountain, Noah W., Jackson, Miss.; (licensed in Mississippi in 1908); died Feb. 19, aged 78.

Francis, Nathan, Rochester, N. Y.; University and Bellevue Hospital Medical College, New York, 1929; member of the American College of Allergists and the Industrial Medical Association; served during World War I; for many years on the medical staff of the county department of public welfare, children's division; since 1945 a member of the medical staff of Eastman Kodak Company; on the staff of the General Hospital, where he died Jan. 23, aged 54, of arteriosclerotic heart disease.

Gleason, Roy Lee ⊕ Fort Collins, Colo.; St. Louis University School of Medicine, 1908; member of the American Academy of General Practice; died Feb. 11, aged 72, of cerebral hemorrhage.

Gordon, Joshua Mandel ⊕ South Bend, Ind.; Chicago College of Medicine and Surgery, 1909; served during World War I; on the consulting staff of St. Joseph's Hospital, where he died Jan. 25, aged 75, of metastatic carcinoma of the lungs with primary lesion in the right kidney.

Guiss, William Henry ⊕ Tiro, Ohio; Western Reserve University Medical Department, Cleveland, 1887; served on the board of education of Tiro and the Crawford County Board of Education; for many years on the village council; died Jan. 21, aged 88, of coronary thrombosis.

Hansen, Fitch Phelps ⊕ Denver; University of Colorado School of Medicine, Denver, 1912; died Feb. 20, aged 64, of arteriosclerotic heart disease.

Hart, Edward Elmer ⊕ Toledo, Ohio; Meharry Medical College, Nashville, Tenn., 1924; member of the American Trudeau Society and the American Academy of General Practice; died in the Mercy Hospital Feb. 19, aged 55.

Hartman, John Van Horn ⊕ Findlay, Ohio; Cleveland Homeopathic Medical College, 1904; past president of the Hancock County Medical Society; fellow of the American College of Surgeons; served overseas during World War I; affiliated with Findlay Hospital; died Feb. 16, aged 75, of coronary thrombosis.

Ivimey, Muriel ⊕ New York City; Johns Hopkins University School of Medicine, Baltimore, 1922; formerly associate dean and one of the founders of the American Institute for Psychoanalysis, where she was a member of the faculty council and board of trustees; died Feb. 26, aged 64, of coronary occlusion.

Jacobs, Harry A. ⊕ Indianapolis; Medical College of Indiana, Indianapolis, 1901; affiliated with St. Vincent's Hospital; died Feb. 2, aged 72, of coronary heart disease.

Koplowitz, Abraham ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1899; fellow of the American College of Surgeons; past president of the Kings County Medical Society; affiliated with Beth-El Hospital, where he died Feb. 11, aged 73, of coronary disease.

Kruidenier, Bastian ⊕ Detroit; University of Michigan Medical School, Ann Arbor, 1932; affiliated with Saratoga General Hospital; died Feb. 2, aged 62, of coronary thrombosis.

Lamb, Andrew Joseph ⊕ Cleveland; Western Reserve University School of Medicine, Cleveland, 1935; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; served during World War II; affiliated with St. Luke's Hospital, where he died Feb. 9, aged 41, of acute myocardial infarction.

Leamy, LaBarre Jayne, Spring City, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; affiliated with the Pennhurst State School; served as senior physician of the Bureau of Charities and Correction in Philadelphia; died in the U. S. Naval Hospital Feb. 5, aged 79, of congestive heart failure.

Lemaire, William Franklin ⊕ Lynn, Mass.; University of Vermont College of Medicine, Burlington, 1904; for many years president of the Union Hospital; died in John Adams Hospital in Chelsea Feb. 10, aged 74, of arteriosclerotic heart disease.

Mangan, Peter A., Chicago; St. Louis University School of Medicine, 1908; died Feb. 19, aged 71, of cerebral thrombosis and arteriosclerosis.

Mann, Jesse Thomas ⊕ Chevy Chase, Md.; George Washington University School of Medicine, Washington, D. C., 1917; member of the Medical Society of the District of Columbia and the American Society of Anesthesiologists; died Feb. 15, aged 57.

Manning, Homer Clay ⊕ Cushing, Okla.; Chattanooga (Tenn.) Medical College, 1907; past president of the Payne County Medical Society; affiliated with Cushing Municipal Hospital; died Feb. 8, aged 71, of cardiac asthma.

Nixon, Ethel Louise, Washington, D. C.; Howard University College of Medicine, Washington, D. C., 1934; certified by the National Board of Medical Examiners; affiliated with Washington Board of Public Welfare; member of the board of directors of the Y.W.C.A.; died March 7, aged 42, of leukemia.

O'Neill, John Henry, Jersey City, N. J.; University of the City of New York Medical Department, New York, 1894; died Feb. 12, aged 80, of cerebral thrombosis.

Owens, William Harris, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1909; formerly affiliated with the Veterans Administration; died Feb. 13, aged 73, of coronary occlusion.

Paulk, George A. ⊕ Coral Gables, Fla.; Louisville (Ky.) Medical College, 1896; member of the Industrial Medical Association; formerly practiced in Alapaha, Ga., and was a member of the state house of representatives and senate and member of the state board of medical examiners and state industrial commission; died Feb. 9, aged 76, of carcinoma.

Peter, Alphonse Joseph, Newburyport, Mass.; Tufts College Medical School, Boston, 1911; served on the staff of Anna Jacques Hospital; died in West Palm Beach, Fla., Feb. 5, aged 65, of arteriosclerotic heart disease, bronchopneumonia, and diabetes mellitus.

Richardson, Walter Earl, St. Paul; Rush Medical College, Chicago, 1896; served during World War I; died Feb. 7, aged 80, of pneumonitis and coronary arteriosclerosis.

Robbins, Jesse Wright, Steele, Mo.; St. Louis College of Physicians and Surgeons, 1908; died in Memorial Hospital, Hayti, Jan. 17, aged 70, of chronic myocarditis and arteriosclerosis.

Samorini, Arnaldo Aloysio ⊕ Schenectady, N. Y.; Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia, 1900; an Associate Fellow of the American Medical Association; health officer's physician; affiliated with Ellis Hospital and St. Clare's Hospital, where he died Feb. 24, aged 77, of coronary artery sclerosis.

Sanford, Herbert Marvin ⊕ Perryton, Texas; University of Oklahoma School of Medicine, Oklahoma City, 1938; served during World War II; died Jan. 7, aged 39, of a heart attack.

Tolleson, William A. ⊕ Eufaula, Okla.; Missouri Medical College, St. Louis, 1895; member of the House of Delegates of the American Medical Association in 1914; formerly affiliated with the Indian Service; served as director of the state national bank; for many terms on the city council; died in Muskogee Jan. 24, aged 83, of chronic myocarditis, chronic nephritis, and hypertension.

Wilkinson, William W., La Crosse, Va.; University College of Medicine, Richmond, 1901; formerly on the board of visitors of the Medical College of Virginia in Richmond; instrumental in the organization of the Bank of La Crosse, and its president since 1930; member of the board of directors of the Citizens Bank of South Hill; died Feb. 23, aged 74, of melanoma.

Willson, Sara Thomasina Chase, Alma, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; formerly on the staff of the Kalamazoo (Mich.) State Hospital; died Feb. 9, aged 87, of chronic myocarditis.

Wortman, Arthur Vance, Pasadena, Calif.; University of Nebraska College of Medicine, Omaha, 1932; served during World War II; died Feb. 25, aged 61, of arteriosclerotic heart disease.

GOVERNMENT SERVICES

ARMY

Medical Meeting in Korea.—The bimonthly meeting of the 38th Parallel Medical Society, held April 5, at Headquarters, United States I Corps in Korea, featured a symposium on hemorrhagic fever with 12 speakers discussing various facets of this Oriental disease. Introductory remarks were made by Col. Roy Roberts, representing Brig. Gen. L. Holmes Ginn Jr., Eighth Army surgeon. Other speakers included Lieut. Col. Carl N. Ekman, commanding officer of the 48th Surgical Hospital, the Army's hemorrhagic fever treatment and research center; Dr. Marshall Hertig, director of the Field Unit on Hemorrhagic Fever; Major John A. Sheedy, chief of Medical Service; and 1st Lieut. Robert B. Giles, assistant chief of the Medical Service, both of the 48th Surgical Hospital. The discussion following the presentation of papers was moderated by Colonel Roberts, medical consultant to the Eighth Army surgeon.

June Graduates Receive Army Internships.—The Surgeon General announces that 150 June graduates of the nation's medical schools have been approved for the Army's medical intern program and will spend their first year out of school in one of the Army's 11 teaching hospitals. The young physicians will be commissioned and called into active duty as first lieutenants in the Army Reserve July 1. They will follow planned programs under the guidance of both civilian and military physicians. The program is a rotating internship, offering experience in all the major fields of medicine. Members of this year's intern group hail from 33 states and the District of Columbia. The 10 graduates listing Illinois as their home make up the largest number to come from a single state. The prospective interns trained in 49 medical schools. Nine come from the University of Oklahoma, eight from Loyola University, Chicago, seven each from St. Louis University, Temple University, and the University of Colorado, and six each from George Washington University and Emory University.

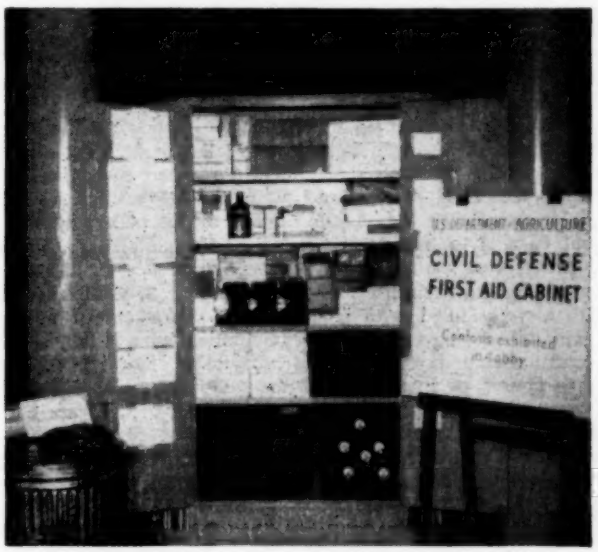
DEPARTMENT OF DEFENSE

Dr. Casberg Appointed Assistant to Secretary of Defense.—Dr. Melvin A. Casberg has been appointed assistant to the Secretary of Defense (Health and Medical). The new office of the assistant to the Secretary will replace the Armed Forces Medical Policy Council, of which Dr. Casberg has been chairman since April, 1952. It will be responsible for all health and medical matters within and involving the Department of Defense. In addition, the office will establish and review for the Armed Forces all health and medical policies, plans, standards, and criteria. It will maintain liaison with all other governmental and civilian health and medical agencies or associations on a national and international basis on matters of mutual interest or responsibility.

Six civilians have been named by Dr. Casberg as an advisory council. Reappointed from the Armed Forces Medical Policy Council are Dr. Isidor S. Ravdin, professor of surgery at the University of Pennsylvania, Dr. Alfred R. Shands Jr., medical director of the Nemours Foundation in Wilmington, Del., and formerly associate professor of orthopedic surgery at Duke University School of Medicine, and James P. Hollers, D.D.S., of San Antonio, Texas, a past president of the National Association of Reserve Officers. Newly appointed to the advisory council are Drs. William S. Middleton, dean and professor of internal medicine at the University of Wisconsin School of Medicine, Dwight L. Wilbur, of San Francisco, who is clinical professor of medicine at Stanford University School of Medicine, and Anthony J. J. Rourke, president of the Hospital Council of Greater New York and formerly president of the American Hospital Association. Prior to his affiliation with the Office of the Secretary of Defense in January, 1952, Dr. Casberg was dean and associate professor of surgery at St. Louis University School of Medicine.

CIVIL DEFENSE

First Aid Stations.—Several months ago the Federal Civil Defense Administration recommended that first aid stations be established in government agencies, in private office buildings, and in industrial plants for use in time of emergency. In compliance with this recommendation, the Department of Agriculture, under the supervision of Dr. Leo J. Schildhaus of the Division of Employee's Health, has established such stations for the protection of about 8,700 employees in the



First aid cabinet in new Washington, D. C., first aid station.

Washington metropolitan area. A total of 11 fully equipped first aid stations are now set up in the department, with 50 trained volunteers to man each station. It is estimated that each unit will be able to take care of approximately 500 casualties during the first eight hours of an emergency.

VETERANS ADMINISTRATION

Residency in Pathology.—One appointment to a residency in pathology is available at Winter VA Hospital, Topeka, Kan. This residency is approved for one year of training in pathological anatomy and clinical pathology, which may be counted for any one of the three required years of residency training. Winter VA Hospital is equipped with 1,400 beds, 1,000 psychiatric and neurological and 400 general medical and surgical. It is accredited and organized for a large residency program in psychiatry and for residencies in neurology and internal medicine. A resident has the opportunity to participate in any phase of the educational program or to engage in research. The resident will obtain supervised experience in surgical pathology, in autopsy work, in the preparation and direction of clinicopathological conferences, and in the demonstration of microscopic slides.

FOREIGN LETTERS

ECUADOR

Surgical Diseases of Gallbladder and Bile Ducts.—Drs. D. Espinoza Vega and C. Bustamante Pérez reviewed hospital records to ascertain the incidence of surgical diseases of the gallbladder and the bile ducts in certain regions of Ecuador. Dr. Espinoza Vega observed patients in Guayaquil, the most important and typically tropical city on the coast of Ecuador. In the last 10 years, he observed 175,293 hospitalized patients in the Luis Vernaza Hospital, of whom 12,743 (7.27%) had surgical diseases of the gallbladder and/or the bile ducts. Lithiasis was the most frequent disease, affecting about 90%. Next in order of frequency were parasitosis of the bile ducts and neoplasias, in 1% and 0.66%, respectively. Eighty-one per cent of the patients were women. Dr. Bustamante Pérez observed 12,714 patients in the Eugenio Espejo Hospital of Quito, a city in the mountains 2,819 m. above sea level. Out of this number, 825 (6.5%) had surgical diseases of the gallbladder and/or the bile ducts. This percentage seems to indicate that the incidence of these diseases on the coast of Ecuador is greater than in the mountains. Almost one-fifth of the surgical operations in a general hospital are operations on the gallbladder and the bile ducts. In the records observed by the author, 85.7% were women. More than 60% of the patients were between the ages of 25 and 35 years.

Dr. C. Benitez observed more than 100 patients with surgical diseases of the gallbladder and later made histological studies on the removed structure. He reached the following conclusions: 1. Hypotonia and atonia of the gallbladder are more frequent than hypertonia. 2. The degree of hypotonia is about parallel to that of the lesion of the gallbladder, when the lesion consists of fibrous connective tissues in substitution of the normal tissues of the structure. 3. Gallbladders, when entirely filled with calculi, show characters of atonic gallbladders during manometric examination, even if they show a good muscular layer when microscopically observed. 4. The higher figures of hypertonia of the gallbladder are observed in cases of total obstruction of the cystic duct. 5. Ligation of the cystic artery results in lowering the pressure of the gallbladder to 0 cm. of water. 6. Chronic cholecystitis is the most frequent anatomicopathological lesion observed.

Surgical Treatment of Varicose Veins.—Dr. G. Ballesteros, head surgeon of the Clínica del Seguro of Quito, observed 62 patients with varicose veins. The age of the patients was between 30 and 40 in 40% of the cases. Seventy per cent of the patients were either workers in the textile industries, schoolteachers, or porters. Varices were located in the following veins: in the left internal saphena in 37% of the cases, in the right internal saphena in 10%, in both internal saphenas in 35%, and in the external saphenas in 18%. The varices were bilateral in 5% of the cases. The varicose veins had been present for more than six years in 42% of the cases. The 91 operations done in the 62 patients were: high ligation of the internal saphena with simultaneous ligation "in steps" 65 operations; high ligation and retrograde injection 14; high ligation "in steps" in retrograde injection 2; ligation of the external saphena 8; and stripping high ligation 2. The patients were able to walk a few hours after the operation. They were able to return to work between 4 and 10 days after the operation. Forty-five patients reported for observation of late results. It was observed that the treatment failed in 4.5% of the cases. Recurrences were observed in 8% of the cases.

Transmitting Agents of Pinta and of American Trypanosomiasis.—Drs. L. Leon and P. Wygodzinsky carried on a systematic study of the Simulium insects in Ecuador, which play an important role in the transmission of pinta. Simulium riveti and Simulium exiguum are encountered in great abundance in the pinta regions of the country, mainly in the coastal and eastern regions and in some valleys of the mountain zones. The following species, not previously described in this country, were recently found: ecuadoriensis, jujuyense, escomeli, quadrivittatum, dinellii, and ignescens. The authors also made a study of the agents that transmit American trypanosomiasis in Ecuador. The disease was very rare in the country; however, in the course of the last years its incidence has increased. The following species were found to be moderately infectious: Triatoma dimidiata (capitata), Panstrongylus rufotuberculatus, and Triatoma carrioni. The following species, although not naturally infectious, are potential transmitting agents: Panstrongylus geniculatus, Rhodnius prolixus, Triatoma dispar, Triatoma venenosa, and Panstrongylus chinai. The following arthropods, which have been used as experimental transmitting agents of the disease, were also found: Cimex lectularius, Apiomerus pilepes, Clerada apicicornis, Ornithodorus rudis, Ornithodonis forcosus, and Ambylomma cayannense.

FINLAND

New Ear, Nose, and Throat Hospital in Helsinki.—In the precincts of Helsinki there is a wide, rocky, and partly tree-covered area overlooking the Gulf of Finland and reserved for the erection of university hospitals. A gynecologic hospital and a children's hospital have already been opened in this area, and in February, 1951, the new university hospital for diseases of the ear, nose, and throat was opened. The planning of this hospital dates back many years, and its realization was delayed more than a decade by the war. Lodged under the same roof as the eye hospital, the ear, nose, and throat hospital has 110 beds. The outpatient department on the ground floor has a waiting room for 100 patients and is near an examination room that connects with eight smaller rooms reserved for special examinations. Included in the outpatient department are the polyclinic operation theaters (a room for bronchoesophagoscopy, a sterilization room, and a room in which patients can recuperate after operation). The laboratory, housed in the same building as the outpatient department, occupies almost as much space as the patients' quarters and is traversed by a well-lit corridor communicating with numerous rooms, two of which are devoted to histopathological research, another to the examination of urine and feces, and yet another to the examination of blood and cerebrospinal fluid. There are quarters for bacteriology, chemistry, operative experiments on animals, macroscopic photography, and various other activities. Elsewhere in the hospital provision is made for teaching, with a reading room with seating accommodation for 60 and space for cinematographic demonstrations. Special air-conditioning is provided in most of the rooms in this hospital, including about two-thirds of the wards. Further information about this hospital may be obtained on application to Dr. Y. Meurman, Fredrikinkatu 20 A, Helsinki, Finland.

Anticoagulants and Infarction of the Heart.—At the 23rd Scandinavian Congress for Internal Medicine held in the summer of 1952 appreciative comments on the effects of anticoagulants in cases of infarction of the heart were tempered by the admission that carefully controlled investigations of a large number of persons are still lacking. To meet this criticism, Dr. Ruben Gordin has undertaken a comparative study of 252 cases of acute infarction of the heart treated at the fourth medical department of the Maria Hospital in Helsinki. Half of these persons were given anticoagulants. The other half, 126 patients, had been treated in the same hospital shortly before the spring of 1951 and, not having been given anticoagulant therapy, served as controls. In only 1.6% of the

The items in these letters are contributed by regular correspondents in the various foreign countries.

patients given anticoagulants did complications develop, whereas this was the case in 14.3% of the controls. The difference in favor of those given anticoagulants was not so great with regard to the mortality, which was 3.2% for them as compared with 7.1% for the controls. Dr. Gordin finds it natural that anticoagulants are more likely to effect a greater reduction of complications than of actual deaths, seeing that such treatment can hardly be expected to avert death when an extensive fatal infarction has occurred before anticoagulants are given a chance. He has, however, omitted from his material all the deaths that occurred during the first three days following infarction of the heart.

Owren's method for prothrombin determination was taken into use at the Maria Hospital in the spring of 1951, and it has shown that the prothrombin figures could, on the whole, be kept within the limits aimed at. The longest period of anticoagulant treatment was 158 days, the average being 32.5 days. Gordin is of the opinion that this treatment should be continued as long as the patient presents stenocardiac symptoms with electrocardiographic and other signs, including a high sedimentation rate and disquieting leukocyte counts, indicative of active trouble in the heart. He has also come to the conclusion that anticoagulants may often prove life-saving when status anginosus has lasted several days, threatening an attack of infarction of the heart. As for the alleged risk of hemorrhages following treatment with anticoagulants, it should be noted that Gordin's cases showed no hemorrhagic complications. His investigations are published in *Nordisk medicin* for March 13, 1953.

Treatment of Tuberculosis with Isoniazid.—Treatment with isoniazid has been given an extensive trial in Finland since the spring of 1952, and Dr. Erkki Larmola of Kiljava has studied 2,740 patients thus treated at 18 different sanatoriums in Finland. Most of these cases (1,870) were chronic with cavities. The usual daily dose was 5 mg. per kilogram of body weight, and the average duration of treatment was about three months. The criteria by which the value of this therapy was judged included the temperature, weight, sedimentation rate, and cough. The presence or absence of tubercle bacilli in the sputum as well as radiological findings were also noted. In every sanatorium cases were observed in which improvement was effected after various antibiotics, including streptomycin, and other remedies had failed. Good results were obtained in two cases of intestinal tuberculosis and one of meningitis. In several cases changes in the blood including hypochromemia, leukopenia, and leukocytosis were observed, and one of the two cases of anuria ended fatally. Dr. Larmola concludes that while this drug has, at the present time, a place among antituberculosis agents, it is not to be recommended as the sole method of treatment. At several of the sanatoriums it was admitted that the observation period was still too short for drawing any definite conclusions.

Cultivation of Tubercle Bacilli from Throat Swabs and Gastric Lavage.—In 1951 Gilje published an account of cultivation tests of throat swabs and gastric washings, from which he concluded that the former yields a much higher rate of cultivation of tubercle bacilli than the latter. He obtained positive results in 14.8% of his swabs and only 5.5% of his washings. Now, with important differences in technique, Dr. Tauno Laes of Tampere, Finland, has come to a very different conclusion after an examination of 232 patients in whom tubercle bacilli had not previously been found or had ceased to be demonstrable. In 28 of these cases cultivation tests of throat swabs yielded tubercle bacilli, while gastric washings did so in 66 cases. Dr. Laes suggests that his and Gilje's findings were contradictory because there was an interval of four to seven days between the collection and cultivation of the gastric washings of Gilje's material whereas this interval was much shorter in his own material. In other words, the viability of tubercle bacilli in gastric washings diminishes appreciably in a comparatively short time. Dr. Laes, whose address is Tampereen, Keuhkotautiparantola, Tampere, Finland, has published his observations in the Finnish journal *Duodecim*, now incorporated in *Nordisk medicin* for Feb. 20, 1953.

ITALY

Allergy to Foods and Drugs.—The problem of allergies in Italy today has become alarming, whereas 20 years ago there were not many persons with allergy. There were those with hereditary allergy (such as bronchial asthma and psoriasis), but persons with acquired allergy were rare. At present, the number of persons with acquired hypersensitivity is constantly increasing, partly because of the hazards of the recent war and partly because life today in Italy is more complex. For this reason the most important report of the National Society of Medicine in Venice last October was on allergies. The speakers were Prof. G. Dominici, director of the University of Siena Institute of Medical Clinics, Prof. P. Di Mattei, director of the University of Rome Institute of Pharmacology and Medical Therapy, and Prof. U. Serafini, who teaches at the University of Rome.

Crossed Allergies.—All the reports and papers on crossed allergies (thousands of physicians were present) showed that allergies to food and to drugs can cross. In allergy to food as well as in allergy to drugs the mechanism is always the same: antigens induce production of antibodies. Food and drug allergens that act as antigens are not always proteins, although there is no doubt that proteins are the commonest examples. But products of protein degeneration and lipids, carbohydrates, and salts may combine with proteins in the body of the person who ingests them and organize a preparatory or "precipitating" reaction.

Sensitization to food always occurs through the digestive tract, except in a few exceptional cases when it results from direct contact through the skin or from inhalation through the respiratory tract (as in the case of flour or the odor of foods). Because of pronounced permeability of the intestinal wall, the allergen penetrates into the portal blood (there is also the possibility of direct entrance into the lungs through the thoracic duct) and acts as an antigen in the hepatic mesenchymal tissue. Therefore, the involvement of the liver is not always primary; oftener it undergoes the allergic effect in a secondary way through the hepatic mesenchymal tissue. After the allergen has penetrated into the systemic circulation, it can return to the intestine to determine the "precipitating" reaction with the well-known general and local manifestations, including asthenia, headache, high temperature, myalgia, skin eruption, psychic depression, hypotension, gastritis, and enterocolitis.

The increased permeability of the intestinal wall to the allergen is due to alteration of the intestinal mucus, which may be linked to endocrine dysfunctions of the hypophysis, the adrenal cortex, and the gonads. It may be due to an excess of proteins in the usual diet, which in some cases may penetrate the intestinal wall and make the allergens enter the circulation.

For diagnosis the best data are the leukopenic level, the hematic eosinophil count, and results of diet testing. Roentgenographic demonstration of the altered functions of the digestive tract because of the direct or indirect action of the allergenic food is very important. The prognosis in food allergy is good except for unusual cases of acute edema of the glottis, severe collapse, and abdominal emergencies.

Allergy to Drugs.—Professor Di Mattei reported on the prognosis of drug allergy. The sensitization does not necessarily originate from preformed combinations of drugs and proteins, but oftener from combination of the drug or its metabolites with protein after contact or after penetration into the organism. The site of ingestion, concentration of drug, and length of contact seem to affect the combining of the metabolites of the drug with the proteins of the receiving organism. Also the drug may not undergo normal molecular degeneration because it undergoes incomplete metabolism or because it liberates histamine or other vasoactive sensitizers, thus helping a more abrupt and massive absorption. In some cases allergy to a drug is represented by vitamin E deficiency; the drug in disturbing the vitamin equilibrium reflects its own disturbing action on the proteins, lipids, and carbohydrates, and the metabolism of these is conditioned by the integrity of the ratios between enzymes and vitamins.

Drug allergy may depend also on the purity of the substance. When impurities are present, they may act as allergens.

It can also depend on the enzymatic characteristics of some persons who can more or less tolerate a drug given in massive doses. Quinine is well tolerated by persons with hyperthyroidism and malaria, whereas those with hypothyroidism do not tolerate it. Quinine is not tolerated by the dog, probably because its liver lacks the enzyme that destroys quinine, quinine oxidase, which is perhaps a flavoprotein. This flavoprotein is present in the liver of the rabbit and the rat, animals that tolerate quinine better than dogs.

The metabolism of a drug involves such processes as acetylation, conjugations, oxidation, reduction, and methylation. For example, one-third of a dose of sulfanilamide is involved in the liver in methylation and the final product is inactive. If the processes of methylation are inadequate in a certain person, the drug's effect will be greater than that of the given dose should be because of the failure of inactivation of part of it. Because of irregular oxidation of alcohol, which is stopped, let us say, at the aldehyde phase, a person may be allergic to alcohol.

At this point Professor Di Mattei referred to a Query and Minor Note published in THE JOURNAL Oct. 14, 1950, page 598, entitled "Idiosyncrasy to Alcohol." A physician complained that he sensed a "weakness, followed by uncontrollable yawning, profuse sweating of face and hands, fainting sensation, tachycardia and chills." All these symptoms disappeared when the patient went outside to breathe fresh air. This may have been a case in which the process of metabolism of alcohol was interrupted at the aldehyde phase. Allergy to drugs is due to their penetration into the blood, and this penetration is also the measure of their effectiveness. Serafini finished the report by discussing the early diagnosis of allergic reactions to drugs that evolve into serious conditions, such as agranulocytosis, acute yellow atrophy of the liver, erythrodermia, and drug fever.

PARIS

Vestibular Chronaxia in Poisoning.—At a meeting of the National Academy of Medicine, Professor Bourguignon discussed his research on the increase of vesticular chronaxia as a symptom of carbon monoxide poisoning. The same observations were made by Professor Mouriquand and his associates in lead poisoning. The latter has just reported his new research on benzene poisoning, in which there is also an increase of vestibular chronaxia. This alteration of chronaxia is not related to the blood lesions themselves, but is rather parallel with cerebral functional disorders that are provoked by the inhalation of benzene hydrocarbons. On the other hand, this increase of chronaxia corresponds to the intensity of the functional cerebral manifestations in the poisoned patient. Investigations pursued on workmen proved the efficiency of this method in confirming the presence of purely subjective disorders and its consequent value in industrial medicine.

Woman Lives Seventeen Years with Hodgkin's Disease.—At a meeting last December of the Strasbourg Medical Society, J. Warter, Ch. Gros, L. Ruyssen, and M. Moise reported the case of woman who died at the age of 37 after having had Hodgkin's disease for 17 years. The patient married and carried four pregnancies to full term during the evolution of the disease. The authors emphasize that the disease does not grow worse during pregnancy and that the children develop normally and are not affected by the mother's disease. The authors could observe, in the course of this lengthly evolution, that several diseases, including petechial typhus, acute appendicitis, and spirochetal jaundice, brought about regression of enlarged lymph nodes.

Heart Failure in Nursing Infants.—The frequent occurrence in nursing infants of acute heart failure, which is often fatal, is known, but the clinical and anatomic origin has remained obscure. R. Clement, J. Gerbeaux, and J. Couvreur reported, at the July 4, 1952, meeting of the Medical Society of the Paris Hospitals, the case of a 10-month-old child who died of primary heart failure with pronounced enlargement of the heart and electrocardiographic signs of left coronary artery abnormality. Autopsy revealed the grayish-white appearance of the endocardium of the left ventricle, corresponding to a 2 mm. subendocardial thickening. The authors have since been able to study 49 cases of this disease, which is a well-defined clinical and anatomic entity. They believe that the disease is probably of congenital origin. Of 49 children, 43 died in the first year of life. The acute heart failure occurs during an infectious illness. Crises occur during the course of the illness, and death followed 20 times out of 49 in the first crisis. A fibroelastic thickening of the endocardium, 20 to 30 times greater than normal, is characteristic. Hypertrophy of the heart, and especially of the left ventricle, is marked. Inconspicuous lesions of the myocardium were observed in 17 cases.

New Technique for Treatment of Hemiplegia.—Dr. Baillart and G. Bourguignon studied the effect of transcerebral dielectrolysis on ions on cerebral circulation, as indicated by changes in the retinal circulation. These studies showed that vasodilatation occurs only in the hemisphere opposite the electrified one. Thinking that vasodilatation is one of the factors of the therapeutic action of dielectrolysis, G. Bourguignon modified the treatment of hemiplegia by giving biocular dielectrolysis. Thus, improvement in the circulation of the damaged hemisphere is obtained by the action of the current on the side of the healthy one and improvement of the circulation in the diseased extremities is produced by the action of the current on the side of the lesion. The author presented his new technique in the laboratory for electrophysiology of the Salpétrière Hospital during the meeting of the French Societies for Medical Electroradiology held Oct. 16-18, 1952, in Paris.

TURKEY

Vitamin Therapy in Dermatology.—In *Hastane*, the Istanbul periodical for specialists in Turkish hospitals, dermatologist Dr. Kemal Turgut of the Istanbul venereal disease department has published the results of his 10 year experimentation on vitamins as an adjunct to external application of medicaments. In patients who had lichen ruber planus and similar diseases the skin manifestations soon disappeared when vitamin A by mouth was added to external applications of medicaments. Fifteen patients who had lichen ruber planus were given a daily dose of 150,000 units of "prepalin," a vitamin A preparation. The patients recovered within one to two months. A 5-year-old boy who had generalized lichen spinulosus was given a daily dose of 100,000 units of vitamin A supplemented by a generous serving of red carrots for three months. The patient fully recovered after four months' therapy, and since then two years have passed without a relapse. A patient who had lichen simplex chronicus was given, in addition to vitamin A, vitamin C and D, arsenic, and radiotherapy; the results were excellent. In a 20-year-old patient who had syphilis an atypical kind of lichen scrofulosus developed over the whole abdomen during pregnancy; very good results were obtained when the patient was given large doses of vitamin A. Two young women who had keratosis pilaris were given a daily dose of 150,000 units of vitamin A and a pluriglandular preparation as an adjunct. They recovered after two months' therapy. The same therapy was given to two patients who had pityriasis rubra pilaris. Equally good results were obtained. A chemical engineer who had generalized ichthyosis was given vitamin A and D, later supplemented by a pluriglandular preparation and a salicylic acid ointment; very good results were obtained. Seven young women who had acne vulgaris were given 150,000 units of vitamin A; six of these patients recovered within two months, and there was moderate amelioration in the seventh patient.

At the Istanbul Dermatology and Venereal Disease Society Prof. Hasan Rechad presented a patient who had congenital keratosis follicularis who had been given vitamin A therapy with very good results; when the patient omitted taking the vitamin A he had relapse, which proved that in this patient's case the vitamin A therapy must be continued for some time. Prof. Halil Gürün, currently at the medical school in Kabul, Afghanistan, reported excellent results with vitamin A therapy in a patient who had phrynoderma and in two patients with pityriasis rubra pilaris.

CORRESPONDENCE

PHENYLBUTAZONE AND AGRANULOCYTOSIS

To the Editor:—I have just read with interest the report "Agranulocytosis Following Use of Phenylbutazone (Butazolidin®)" by Hinz and others in THE JOURNAL, Jan. 3, 1953, page 38. During the past year and a half, I have obtained a great deal of experience from using this drug in the treatment of over 700 patients with various arthritides and musculoskeletal disorders. While I have observed certain side-reactions caused by it, I believe that, since phenylbutazone has such a wide field of usefulness and is of such great benefit to so many patients, one should examine reports on its therapeutic effectiveness. With this in mind, I wish to comment on the case of agranulocytosis reported in THE JOURNAL.

Despite the authors' statement that serious agranulocytosis has not been previously reported, it should be pointed out that various investigators have noted the importance of periodic blood cell counts on patients receiving phenylbutazone. This precaution has also been stressed in literature circulated by the pharmaceutical division of the Geigy Company, Inc., distributors of the drug.

In reviewing the case history of the patient reported on in THE JOURNAL, I note that she was first given phenylbutazone on July 22, 1952, and was not seen again in the clinic until three weeks later, on Aug. 12. At that time a complete blood cell count was performed. The patient was not seen again until Sept. 7 when she sought admission to the hospital. It is apparent from this sequence of events that the degree of medical supervision of this patient and the failure to take weekly blood cell counts were not in accord with the precautions advised by almost all authorities who have worked with this drug. It is entirely conceivable that this patient became leukopenic long before her hospital admission and that only the development of clinical symptoms brought her condition to light. It is probably advisable to see patients twice weekly for two weeks after they are given phenylbutazone for the first time. Blood cell counts should be done weekly during the first four to six weeks of therapy and less frequently thereafter. Furthermore, the patient should be instructed to report to the physician or to the clinic immediately if symptoms such as sores in the mouth or rectum, fever, or sore throat develop. In the case reported, the patient apparently did not seek hospital admission until six days after the initial development of symptoms.

The fact that very considerable amounts of phenylbutazone were detectable in the blood of this patient on the day that symptomatic and hematological improvement occurred (eighth hospital day) is of exceptional interest and tends to disprove the authors' contention that this type of reaction parallels acute agranulocytic angina caused by aminopyrine. Ordinarily, when the administration of phenylbutazone is discontinued after several weeks, the concentration of phenylbutazone in the plasma decreases at a rate of 15 to 20% per day (Burns, J. J., and others: *J. Pharmacol. & Exper. Therap.* **106:**375 [Dec.] 1952). This patient apparently metabolized the drug at a considerably slower rate, so that on the eighth hospital day (also the eighth day after therapy with the drug was terminated), when recovery started, there was a concentration of about 50 mg. of phenylbutazone per liter of plasma. This means that the patient had a considerable amount of phenylbutazone in her body at the time recovery from agranulocytosis occurred. That this ever occurs in cases of agranulocytosis as a result of therapy with aminopyrine is extremely unlikely. Since aminopyrine is metabolized very rapidly (Gsell, O., and Müller, W.: *Schweiz med. Wchnschr.* **80:**310 [March 25] 1950), a comparable situation could be obtained only by subjecting a patient to the administration of aminopyrine before and during recovery from the blood dyscrasia. In patients who have recovered from agranulocytic angina caused by aminopyrine, a very minute, challenging dose of the drug may cause a recurrence of the reaction, which is sometimes very severe and prolonged. Because of this well-known effect of challenging doses in aminopyrine-sensitive patients, Hinz and his associates felt it advisable not to challenge this patient with a test dose of phenylbutazone. In effect, however, they were doing just this, since the patient already had an appreciable amount of phenylbutazone in her body at the time of recovery.

It is of interest to note that Kuzell reported two cases of granulocytopenia associated with combined sodium, 4,4'-diaminodiphenylsulfone-2-N-acetylsulfonamide (Promacetin), and phenylbutazone treatment and two cases of granulocytopenia in patients who had received only phenylbutazone. In both of the former and in one of the latter cases phenylbutazone was administered in therapeutic doses after recovery without any subsequent disturbance of the blood chemistry.

From these facts, one might postulate that the depression of the leukocyte count and, in the case reported in THE JOURNAL, red blood cell count is caused by direct action on the bone marrow that results when a high concentration of phenylbutazone is maintained in the body. When the concentration of phenylbutazone falls below a certain critical level, the bone marrow apparently is no longer affected and recovery occurs. The difference between this type of agranulocytic reaction and the agranulocytosis caused by aminopyrine, which is usually considered a hypersensitivity reaction, thus becomes obvious.

In order to minimize the danger of blood dyscrasia, it is advisable to observe the following precautions: 1. Phenylbutazone should be administered in the smallest dosage that will provide a satisfactory therapeutic response. In many patients, a satisfactory level can be maintained by a dose of 200 to 400 mg. per day. 2. Patients treated with phenylbutazone should be seen regularly. Blood cell counts should be done at weekly intervals in the early stages of treatment and at less frequent intervals thereafter. Although granulocytopenia can occur in hypersensitive patients within 24 hours after a normal blood cell count is obtained, the type of reaction caused by phenylbutazone may have a more gradual onset. Periodic blood cell counts may give early warning of this complication. 3. Patients receiving phenylbutazone should be told to report immediately the development of sore throat, fever, and sores in the mouth or rectum. In my experience, when these and other reasonable precautions are taken, phenylbutazone can be administered with comparative safety.

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TYPHOID IMMUNIZATION

To the Editor:—During the months of May and June many patients will ask their physicians about the advisability of typhoid revaccination for themselves or for their children. Need for this immunization has increased in recent years because, in instances in which children go to summer camps and adults spend their summers in foreign travel, exposure is much greater than usual. In both instances, typhoid vaccination is advised by health authorities.

It seems to me, from personal experience and observation, that there is considerable confusion and misunderstanding in the minds of many physicians about the proper vaccination procedure. This is particularly true in respect to revaccination of previously immunized persons. I have found, for example, that some children and adults have been given three injections of the typhoid vaccine subcutaneously as soon as one or two years after the initial immunization. This is not only unnecessary but subjects these patients, especially children, to uncomfortable and even hazardous reactions.

As the result of comparative studies of various methods of administration of typhoid vaccine, I reported that satisfactory immunization equal to that of the ordinary subcutaneous route could be accomplished by the intracutaneous injection of ordinary mixed typhoid vaccine given in three doses, 0.1 cc., 0.15 cc., and 0.2 cc., at weekly intervals (*J. Lab. & Clin. Med.* **16**:552, 1931, and *J. Infect. Dis.* **50**:98, 1932). This method had a distinct advantage over other routes because it avoided most of the disagreeable, general reactions that often follow intramuscular or subcutaneous injections, while at the same time affording an equal degree of protection.

In a subsequent study (*Am. J. M. Sc.* **199**:84, 1940), I also showed that an intracutaneous injection of 0.1 cc. of ordinary typhoid vaccine was sufficient to restimulate satisfactorily the protective antibodies in patients previously immunized, even after four or five years. The latter finding was soon corroborated by national health authorities, and the Navy subsequently authorized this method for booster doses. The Army has done the same more recently. This method of revaccination avoids constitutional reactions and is definitely less distressing to the patient. At present, the regulation for reimmunization of all three armed services consists of a single booster dose of either 0.1 cc. of vaccine administered intracutaneously or 0.5 cc. administered subcutaneously. The regulation requires the booster dose to be given every three years; in those persons doing overseas duty, it is to be repeated at one year intervals. The subcutaneous route is still suggested for primary immunization, probably as a matter of expediency because it permits faster administration in mass immunization and not because of any objection to the immunological results of intracutaneous administration. Since the need for speed in injection is not found in private practice, it is not a valid objection to the intracutaneous method of vaccination.

To those physicians who wish to immunize their patients against typhoid, I suggest that they use the intracutaneous method for reimmunization and that a single dose of 0.1 cc. of ordinary typhoid vaccine be given to both adults and children. I also believe that this method is satisfactory for primary immunization and that weekly doses of 0.1 cc., 0.15 cc., and 0.2 cc. be given to adults and 0.05 cc., 0.1 cc., and 0.15 cc. be given to children. General or constitutional reactions are quite infrequent, and the only reaction that sometimes results is a localized swelling at the site of injection. In my experience, the intracutaneous method is the superior form of immunization.

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HISTORY OF NEUROLOGICAL SURGERY

To the Editor:—In The Journal, Jan. 3, 1953, page 84, and also in *Neurology* (**3**:76 [Jan.] 1953) there are reviews of Dr. Ernest Sachs' book "The History and Development of Neurological Surgery." Everyone will agree with the praise sung there to Dr. Sachs. But attention should be called to a number of inaccuracies in the book that the reviewers failed to mention. Let us look at the text and simply quote.

There is in Germany a Gesellschaft Naturforscher und Aerzte, but never has there been a "Gesellschaft naturforschender Aertze," (page 45). The name of the famed German neurologist was Lewandowsky, and not "Lewandovsky" (page 59). It is Richard Cassirer and not "Robert Cassirer" (page 59). To call the man "Robert Cassirer," is the same as speaking of Hans Cushing. It is Constantin von Monakow and not "Carl von Monakow," and he was Swiss and not German (page 59). Alcohol injection in the trigeminal nerve was introduced by K. Schlösser of Munich and not by "K. Schlosser of Innsbruck" (page 73) and this was done in 1903 and not in 1907 (page 138). The book "Peripheral Nerve Injuries" was written by Haymaker and Woodhall and not by Woodhall (page 75) nor by Woodhall and Haymaker (page 143). Figure 47 is a photograph of a neurosurgical group; all are familiar faces; figure 48, the key to the photograph, is wrongly numbered. Number 14 designates Schaltenbrand, but the corresponding photograph is that of Pette. According to the legend that accompanies the key, no. 24 designates Frazier; however, Frazier, who sits beside Sachs himself, is numbered 29 in the key.

The "excellent" bibliography contains many misprints and inaccuracies, for example, number 161: Frankl-Hochwart wrote about Zirbeldrüsentumoren but not about "Zirzeldrüsentumoren." Numbers 185, 466, and 518 refer to the journal *"Zentralbl.f.d.ges. Chir. u. Grenzgeb."* Correctly, it is *Centralbl. f. Chir.* (the letter Z replaces C from volume 30, 1903). The German article of Hirsch (no. 221) is not about "endonaschen" operation, but endonasalen operation. The famous operation of Keen for wry neck consisted not of "excretion" of the nerves but of their excision (number 263). Under number 516, the title of a classic work of Virchow contains five mistakes in spelling. "Facts are stubborn things," and historical facts all the more so.

R. Wartenberg, M.D.

AMERICAN MEDICAL SOCIETY IN VIENNA

To the Editor:—On or about May 1, we are scheduled to open our new American Medical Society club rooms, situated on Universitätsstrasse 11, adjacent to the university and clinics. These new quarters are larger and more representative than the old premises, which were closed by Nazi decree in 1941. In the years between 1904 and 1941, over 20,000 English speaking postgraduates enjoyed the facilities and amenities provided within the former A. M. A. of Vienna club quarters. During that time members enjoyed a comfortable and adequate library, which contained most of the then recent medical volumes and periodicals. The new club rooms have been designed with very special attention to the library. Space for over 4,000 books has been provided. Unfortunately, but very few rather outdated books are presently available.

Many thousands of former A. M. A. "life-members" will surely remember the hours they spent in the old library and will perhaps care to contribute one or more volumes to the new. Any and all modern medical volumes or yearly subscriptions to medical periodicals will be sincerely appreciated. A book plate bearing the donor's name and address will be affixed to each book and periodical sent. All books and periodicals should be sent to the American Medical Society, % American Embassy, Vienna, Austria.

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"STILBAMIDINE" THERAPY

To the Editor:—The comment of Cohen on the dangers of "stilbamidine" therapy in The Journal (page 1332, Nov. 29, 1952) reiterates a warning that has been made in the literature on numerous occasions. These references may be found in an article on blastomycosis and its treatment with "stilbamidine," by Schoenbach, Miller, and Long (*Ann. Int. Med.* **37**:31-47 [July] 1952). Exposure of "stilbamidine" to light for short periods of time will produce a toxic product. The end products of such deterioration are not known with certainty.

Evidence of hepatic or renal toxicity following treatment in man with fresh solutions has not been observed. Several thousand patients, including many who were considered poor risks, chronically ill Asiatics and Africans, have been treated with one or more of the diamidines. Deaths due to delayed poisoning with hepatic and renal injury have been reported in patients who were given solutions made in England and shipped by air. It is now known that such solutions are unstable and become toxic. The growing number of reports in the literature testify to the beneficial effects of "stilbamidine" and 2-hydroxystilbamidine in the treatment of blastomycosis. Freshly prepared solution of these two agents must, however, be used.

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COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

INTERNSHIPS AND RESIDENCIES

The following internship and residency programs have been approved since the publication of the list of Approved Internships and Residencies in THE JOURNAL, Sept. 27, 1952. A number of hospitals not included in this list have recently been surveyed by representatives of the Council on Medical Education and Hospitals and have been recommended for internship or residency approval. These hospitals will be notified as soon as final action on their applications has been completed.

Additional information regarding the hospitals on the following list will appear in the next Internship and Residency Number of THE JOURNAL.

ADDITIONAL INTERNSHIPS APPROVED

Baptist Hospital, Birmingham, Ala.
St. Joseph Hospital, Fort Wayne, Ind.
Prince George's General Hospital, Cheverly, Md.
Bon Secours Hospital, Grosse Point, Mich.
Lutheran Hospital, St. Louis, Mo.
All Souls Hospital, Morristown, N. J.
Bergen Pines County Hospital, Paramus, N. J.
Evangelical Deaconess Hospital, Cleveland, Ohio
Chestnut Hill Hospital, Philadelphia, Pa.
Arecibo District Hospital, Arecibo, Puerto Rico

ANESTHESIOLOGY

U. S. Air Force Base Hospital, San Antonio, Texas
Santa Clara County Hospital, San Jose, Calif.
New England Deaconess Hospital, Boston, Mass.
Holyoke Hospital, Holyoke, Mass.
Mount Sinai Hospital, New York City
Parkland Hospital, Dallas, Texas

CARDIOVASCULAR DISEASE

Lenox Hill Hospital, New York City
Cleveland Clinic Hospital, Cleveland, Ohio
Temple University Hospital, Philadelphia, Pa.

GASTROENTEROLOGY

Brooke Army Medical Center, San Antonio, Texas
Henry Ford Hospital, Detroit, Mich.

GENERAL PRACTICE

Contra Costa County Hospital, Martinez, Calif.
St. Mary of Nazareth Hospital, Chicago, Ill.
Swedish-American Hospital, Rockford, Ill.
Methodist Hospital, Indianapolis, Ind.
St. Patrick's Hospital, Lake Charles, La.
St. Anne's Hospital, Fall River, Mass.
Hurley Hospital, Flint, Mich.
St. Mary's Hospital, Saginaw, Mich.
Fairview Hospital, Minneapolis, Minn.
Mercy Hospital, Canton, Ohio
White Cross Hospital, Columbus, Ohio
Mercy Hospital, Toledo, Ohio
St. John's General Hospital, Pittsburgh, Pa.

INTERNAL MEDICINE

Veterans Admin. Hospital, Iowa City, Iowa
Veterans Admin. Hospital, San Juan, Puerto Rico
Samuel Merritt Hospital, Oakland, Calif.
John J. McCook Memorial Hospital, Hartford, Conn.
Columbus Hospital, Chicago, Ill.
Halstead Hospital, Halstead, Kan.
Lawrence F. Quigley Memorial Hospital, Chelsea, Mass.
McLaren General Hospital, Flint, Mich.
Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.
Alexandria Hospital, Alexandria, Va.
Memorial Hospital, Charleston, W. Va.
Ohio Valley General Hospital, Wheeling, W. Va.

OBSTETRICS AND GYNECOLOGY

Carraway Methodist Hospital,[1] Birmingham, Ala.
New England Hospital,[1] Boston, Mass.
St. Margaret's Hospital,[1] Boston, Mass.
Missouri Baptist Hospital, St. Louis, Mo.
St. Luke's Hospital, St. Louis, Mo.
Bishop Clarkson Memorial Hospital, Omaha, Neb.
Kings County Hospital (University Service), Brooklyn, N. Y.

OBSTETRICS AND GYNECOLOGY—(Continued)

City Memorial Hospital, Winston-Salem, N. C.
Coney Island Hospital, Brooklyn, N. Y.
Francis Delafield Hospital,[2] New York City
Aultman Hospital, Canton, Ohio
Marymount Hospital, Garfield Heights, Ohio
Memorial Hospital, Charleston, W. Va.

OPHTHALMOLOGY

Evanston Hospital, Evanston, Ill.

ORTHOPEDIC SURGERY

U. S. Air Force Base Hospital, San Antonio, Texas
St. Francis Hospital, Wichita, Kan.
Massachusetts Memorial Hospitals, Boston, Mass.

PATHOLOGY

Veterans Admin. Hospital, Iowa City, Iowa
Veterans Admin. Hospital, Topeka, Kan.
Veterans Admin. Hospital, Albuquerque, N. M.
Veterans Admin. Hospital, Albany, N. Y.
Veterans Admin. Hospital, Buffalo, N. Y.
Veterans Admin. Hospital, Seattle, Wash.
City Hospital, Mobile, Ala.
Seaside Memorial Hospital, Long Beach, Calif.
Sacramento County Hospital, Sacramento, Calif.
General Rose Memorial Hospital, Denver, Colo.
St. Joseph's Hospital, Denver, Colo.
Wilmington General Hospital, Wilmington, Del.
Mt. Sinai Hospital, Miami Beach, Fla.
Georgia Baptist Hospital, Atlanta, Ga.
St. Vincent's Hospital, Indianapolis, Ind.
Baton Rouge General Hospital, Baton Rouge, La.
Faulkner Hospital, Boston, Mass.
St. Joseph's Mercy Hospital, Ann Arbor, Mich.
St. Luke's Hospital, Duluth, Minn.
St. Joseph's Hospital, St. Paul, Minn.
St. Mary's Hospital, Kansas City, Mo.
St. Joseph Hospital, Paterson, N. J.
Genesee Hospital, Rochester, N. Y.
St. Joseph's Hospital, Syracuse, N.Y.
Lutheran Hospital, Cleveland, Ohio
St. Elizabeth Hospital, Youngstown, Ohio
St. John's Hospital, Tulsa, Okla.
St. Vincent's Hospital, Erie, Pa.
St. Margaret Memorial Hospital, Pittsburgh, Pa.
Community General Hospital, Reading, Pa.
St. Joseph's Hospital, Reading, Pa.
St. Mary's Memorial Hospital, Knoxville, Tenn.
Harris Hospital, Fort Worth, Texas
Bishop DeGoesbriand Hospital, Burlington, Vt.
Lynchburg General Hospital, Lynchburg, Va.
Doctors Hospital, Seattle, Wash.
Sacred Heart Hospital, Spokane, Wash.
St. Joseph's Hospital, Parkersburg, W. Va.
Madison General Hospital, Madison, Wis.
St. Joseph's Hospital, Marshfield, Wis.
Milwaukee Hospital, Milwaukee, Wis.
San Juan City Hospital, San Juan, Puerto Rico

PEDIATRICS

Illinois Masonic Hospital, Chicago, Ill.
Evanston Hospital, Evanston, Ill.
St. Francis Hospital, Evanston, Ill.
Kings County Hospital (University Service), Brooklyn, N. Y.
Misericordia Hospital, New York City
City Hospital, Cleveland, Ohio
George F. Geisinger Memorial Hospital, Danville, Pa.

PLASTIC SURGERY

Veterans Admin. Hospital, Los Angeles, Cailf.

PSYCHIATRY

Mental Health Institute, Independence, Iowa
Osawatomie State Hospital, Osawatomie, Kan.
Topeka State Hospital, Topeka, Kan.
St. Elizabeth's Hospital, Boston, Mass.
Worcester State Hospital, Worcester, Mass.
Creighton Memorial-St. Joseph Hospital, Omaha, Neb.
High Point Hospital, Port Chester, N. Y.
Ellis Hospital, Schenectady, N. Y.
University Hospitals
Columbus Receiving Hospital, Columbus, Ohio
Ohio State University Hospital, Columbus, Ohio
Emma Pendleton Bradley Home, Riverside, R. I.
Brattleboro Retreat, Brattleboro, Vt.

PULMONARY DISEASES

Gallinger Municipal Hospital, Washington, D. C.

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1. Approved for training in obstetrics only.
2. Approved for training in gynecology only.

RADIOLOGY

Veterans Admin. Hospital, Augusta, Ga.
Kern General Hospital, Bakersfield, Calif.
Duval Medical Center, Jacksonville, Fla.
Mount Sinai Hospital, Miami Beach, Fla.
St. Francis Hospital, Wichita, Kan.
Lawrence General Hospital, Lawrence, Mass.
Jennings Memorial Hospital, Detroit, Mich.
Wesley Hospital, Oklahoma City, Okla.
Chestnut Hill Hospital, Philadelphia, Pa.

SURGERY

Approved for three years of training by the Council, the American Board of Surgery, and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery.

Veterans Admin. Hospital, Albany, N. Y.
Mount Sinai Hospital, Miami Beach, Fla.
McLaren General Hospital, Flint, Mich.
Mount Sinai Hospital, Minneapolis, Minn.
Johnston-Willis Hospital, Richmond, Va.
Ohio Valley General Hospital, Wheeling, W. Va.
Westfield State Sanatorium,[3] Westfield, Mass.

Approved by the Council as offering satisfactory training of one or two years' duration, in preparation for residency training in the surgical specialties (Approved Programs in Surgery, *J. A. M. A.* **142**: 1216 [April 15] 1950).

U. S. Army Hospital, Fort Belvoir, Va.
General Hospital of Riverside County, Arlington, Calif.
MacNeal Memorial Hospital, Berwyn, Ill.
Clinic Hospital, Bluffton, Ind.
Burbank Hospital, Fitchburg, Mass.
St. Joseph Mercy Hospital, Pontiac, Mich.
Jewish Memorial Hospital, New York City
Memorial Hospital, Charleston, W. Va.
Mercy Hospital, Janesville, Wis.

THORACIC SURGERY

Veterans Admin. Hospital, Los Angeles, Calif.
Kings County Hospital (University Service), Brooklyn, N. Y.
Philadelphia General Hospital, Philadelphia, Pa.
University Hospitals
Ohio State University Hospital, Columbus, Ohio
Ohio Tuberculosis Hospital, Columbus, Ohio

UROLOGY

Decatur and Macon County Hospital, Decatur, Ill.
St. Mary's Hospital, Minneapolis, Minn.

PEIPING UNION MEDICAL COLLEGE

At their meetings in February, the Council on Medical Education and Hospitals and the executive council of the Association of American Medical Colleges voted to include the Peiping Union Medical College, Peiping, China, in the list of foreign medical schools whose graduates they recommend for consideration on the same basis as graduates of approved medical schools in the United States. Addition of this school to the list was contemplated several years ago, but action was delayed because of the communist conquest of China. It has now been learned that no diplomas were issued by this school to any class after the class of 1943.

The councils, therefore, have added Peiping Union Medical College to the list, with the notation that their recommendation applies to all those graduates who were granted the degree of doctor of medicine from the date when the first degrees were conferred in 1924 until and including the class of 1943. The education of students in the last class, that of 1943, was interrupted by World War II; therefore, some students finally completed their studies as late as 1949. However, their diplomas were issued as of the class of 1943. After the communist conquest of China the name of this school was changed to the China Union Medical College. The recommendation does not apply to this school.

DONALD G. ANDERSON, M.D., *Secretary*.

3. Approved by the Council, the American Board of Surgery, and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery as offering training in surgery of less than three years' duration and as integrated with or contributory to a fully approved program.

MEDICAL MOTION PICTURES

Clinical Shock PMF 5108: 16 mm., black and white, sound, showing time 32 minutes. Produced in 1952 by the Department of the Army. Procurable on loan from Area Surgeon of the Army Area in which the request originates.

Shock is a complex syndrome characterized by reduction in the effective circulating blood volume. By animation and pictorial clinical history this concept is illustrated by detailed demonstration of the five general principles of shock management: (1) determine the cause, (2) determine the physiological disturbances, (3) remove the cause, (4) correct the physiological disturbances, and (5) prevent anoxia. The producers of this film have failed in their mission to obtain improvement of presentation over that of the lecture with blackboard demonstration. In the first place, too much of the photography deals with elementary material. Moreover, there is too much repetition in photography and script, and much of this repetition deals with elementary data, such as a patient vomiting blood. In general, the narration includes the important features of shock but the audience's attention is diverted so much by irrelevant photography that there may be difficulty in obtaining efficient perception of the data available in the film. The picture is overdramatic. The photography and narration are very well done. It appears as though the producer tried to make a film that would be suitable for both the enlisted man and the medical officer, and as a result it fails to reach either group. Short sections of the film could be used to advantage to illustrate a particular phase of shock. For example, the sequence on the pathophysiology of shock is very well done.

Hypertensive Crises: 16 mm., color, sound, showing time 48 minutes. Prepared by the Department of Pharmacology and the Department of Medicine, Boston University School of Medicine, and the Department of Medicine, Harvard Medical School. Sponsored by Riker Laboratories, Inc., Los Angeles. Produced in 1952 by and procurable on loan from Medical Film Guild, Ltd., 167 W. 57th St., New York 19.

As stated by the authors, this is a report-type film designed to introduce a new type of therapy for the treatment of hypertension. Illustrated in detail are the pharmacological investigations with veratrum viride ("veriloid"), which depict the mammalian assay method of evaluating the therapy, spectacular experiments in clinical physiology that measure the cardiac output as well as the hepatic, renal, and peripheral blood flow. The film closes with a thoroughgoing review of patients whose clinical histories range from hypertensive encephalopathy to acute pulmonary edema. Although this picture is scientifically accurate, it is a textbook-type picture, which includes too much data to assimilate in a single or even repeated showings.

The photography, animation, and narration are well done. Because of the long detailed pharmacological sequences, it would not be of interest to the general practitioner. The audience is limited to pharmacologists and physicians specializing in cardiovascular disease.

Operative Cholangiography: 16 mm., color, sound, showing time 18 minutes. Prepared by N. Frederick Hicken, M.D., and A. J. McAllister, M.D., University of Utah, College of Medicine, Salt Lake City. Produced in 1952 by Billy Burke Productions, Hollywood. Procurable through representatives of Winthrop-Stearns, Inc., 1450 Broadway, New York 18.

This film shows the author's technique of operative and postoperative cholangiography. The agent used is 35% iodopyracet (diodrast®). Only a few special instruments are required, but the use of these instruments does tend to insure good pictures. Various pitfalls in obtaining good cholangiograms are briefly and clearly defined and described. Numerous anatomic variations in the duct system are illustrated. Likewise, numerous examples of stones in the common duct are shown. The photography is excellent and well organized. This film would be very effective in presenting the advantages of cholangiography. It should be instructive to medical students and surgeons not yet familiar with the details of cholangiography.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Am. J. Diseases Children, Chicago

85:135-258 (Feb.) 1953

Thyrotropic Hormone in Infants and Children: Differentiation Between Primary and Hypopituitary Hypothyroidism. D. E. Pickering and E. R. Miller.—p. 135.

Trigger Thumb in Infants. J. W. White and W. E. Jensen.—p. 141.

Migraine in Children: Report of 50 Children. G. R. Krupp and A. P. Friedman.—p. 146.

Transverse Myelopathy in Childhood. R. S. Paine and R. K. Byers. —p. 151.

Organic Phosphate Insecticide Poisoning: Report of Two Cases Due to Parathion with Recovery in One. H. R. Chamberlin and R. E. Cooke. —p. 164.

Agenesis of Lung. O. Oyamada, B. M. Gasul and P. H. Holinger. —p. 182.

A.M.A. Arch. Dermat. and Syphilol., Chicago

66:665-768 (Dec.) 1952

Isophasic Reaction Following Experimental Super-Infection of Leishmania Tropica. A. Dostrovsky, F. Sagher and A. Zuckerman.—p. 665.

Use of Two Stilbene Derivatives (Diethylstilbestrol and Stilbamidine) in Treatment of Blastomycosis. A. C. Curtis and E. R. Harrell Jr.—p. 676.

Candida Albicans: Rapid Indentification in Pure Cultures with Carbon Dioxide on Modified Eosin-Methylene Blue Medium. J. T. Weld. —p. 691.

Chromoblastomycosis (Mycetoma Form) Treated by Surgical Excision: Correction of Defect by Cross Leg Pedicled Flap. H. Conway and W. Berkeley.—p. 695.

Procedure for Evaluating Skin-Sensitizing Power of New Materials. M. J. Brunner and A. Smiljanic.—p. 703.

Treatment of Condyloma Acuminatum with Peltatins: Preliminary Report. M. Sullivan and J. T. Hearin.—p. 706.

Inflammatory Carcinoma of Breast. J. M. Siegel.—p. 710.

Acne Neonatorum. F. L. Giknis, W. K. Hall and M. M. Tolman.—p. 717.

Alopecia Areata, Acne, and Milia: Report of Unique Case Illustrating Importance of Hair as Natural Drain. E. J. Ringrose and G. H. Ekblad. —p. 722.

Calcifying Epithelioma: Report of 13 Cases. I. L. Tilden.—p. 728.

*Further Amplification of Concept of Dermatophytid: I. Erythema Annulare Centrifugum as Dermatophytid. O. F. Jillson and R. A. Hoekelman.—p. 738.

Erythema Annulare Centrifugum as a Dermatophytid.—A dermatophytid is an allergic reaction of the skin to a cutaneous fungous infection in some other area. To establish the diagnosis of a dermatophytid it is necessary to demonstrate (1) a primary focus of dermatophytosis; (2) a positive skin test to trichophytin; (3) precipitation of the dermatophytid by activation or overtreatment of the primary focus of dermatophytosis resulting in the release of fungi or fungous products into the blood stream; (4) absence of fungi in the dermatophytid lesions; and (5) clearing of the dermatophytid after the dermatophytosis has been eradicated. After listing lesions that have been identified as dermatophytids, the author describes the symptomatology, differential diagnosis, and pathological aspects of erythema annulare centrifugum. Although its causation is generally regarded as unknown, the Suttons suggested that the disease is a dermatophytid, since they observed that in three cases erythema annulare centrifugum promptly disappeared after effective therapy of vesicular tinea pedis. Jillson and Hoekelman offer further evidence that in some cases erythema annulare centrifugum is a dermatophytid. They describe five cases of this disease in which the minimal criteria for the diagnosis of dermatophytid were fulfilled. In two of these cases, erythema annulare centrifugum was reproduced and made to disappear by the experimental production and eradication of tinea pedis.

67:1-124 (Jan.) 1953

Hair Loss from Sebum. P. Flesch.—p. 1.

Pemphigus in Association with Pregnancy: Observations of Effect of Corticotropin (ACTH) and Cortisone on Pemphigus, the Pregnancy, and the Infant. M. H. Samitz, M. S. Greenberg and J. M. Coletti.—p. 10.

Diagnostic Pitfalls of Dermal Pathology. M. R. Caro.—p. 18.

*Use of Dimercaprol (BAL) Ointment in Chronic Chrome Dermatitis. H. N. Cole Jr.—p. 30.

Recurrent Herpes Simplex Infections of Upper Extremities with Lymphangitis: Report of Three Cases with Virus Studies in Two. E. R. Trice and J. C. Shafer.—p. 37.

Treatment of Pyogenic Skin Infections with Penicillin Given Orally. J. M. Flood.—p. 42.

Sporotrichosis Produced by Sporotrichum Gougeroti: Report of Case and Review of Literature. J. M. Young and E. Ulrich.—p. 44.

*Sandpaper-Abrasion Treatment of Tattoos. E. A. Strakosch.—p. 53.

Progressive Bacterial Synergistic Gangrene: Report of Case Uncontrolled by Systemic Administration of Bacitracin. W. E. Woolridge and G. W. Hogeboom.—p. 56.

Corticotropin and Cortisone: Dosage and Ratio of Intramuscular and Intravenous Corticotropin (ACTH) and Oral Cortisone in Treatment of Certain Dermatoses. D. Bloom, N. Sobel and A. Pelzig.—p. 61.

Pancreatic Function and X-Ray Studies in Psoriasis. J. F. Madden and I. M. Karon.—p. 66.

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Molluscum Contagiosum Treated with Oxytetracycline ("Terramycin"). M. L. Niedelman.—p. 84.

Cytology of Kaposi's Sarcoma. M. H. Stich, H. B. Eiber, M. Morrison and L. Loewe.—p. 85.

Open-Flash Technique for Dermatologic Photography. R. Morris and J. T. Crissey.—p. 92.

Kaposi's Sarcoma and Diabetes Mellitus. F. Ronchese and A. B. Kern. —p. 95.

Isoimmune Phenomenon in Erythema Multiforme. I. N. Holtzman.—p. 97.

Dimercaprol (BAL) Ointment in Chronic Chrome Dermatitis.—Chrome compounds (chromic acid, chromates, and bichromates) are powerful skin irritants. They attack the tissue proteins, forming chemical compounds, as in the tanning of hides. In strong concentration they corrode the skin; less concentrated solutions may produce toxic dermatitis, and in still weaker concentration, the chromates may sensitize the skin and cause an allergic dermatitis. In the past the treatment of chrome dermatitis had been mostly symptomatic, consisting of application of wet dressings, lotions, and ointments. The decision to use a weak concentration of dimercaprol (3%) locally in ointment form in chrome dermatitis was reached because the intramuscular injection of dimercaprol had proved unsatisfactory. Studies on rabbits with experimentally produced chrome dermatitis showed that treatment with 3% dimercaprol ointment produced a 25 to 50% improvement within one week. A clinical study of dimercaprol ointment in seven patients with chronic chrome dermatitis revealed intolerance to dimercaprol in a single case. Two hospitalized patients with severe dermatitis showed complete clinical remission within two weeks with the daily application of 3% dimercaprol ointment to the affected areas. The four remaining patients, still exposed to chromates, showed up to 75% improvement with the continued daily use of the ointment for periods ranging from two to five months.

Sandpaper Abrasion Treatment of Tattoos.—Strakosch describes the removal of tattoos by means of abrasion with sandpaper. He employed the method in three persons who had been tattooed recently on the forearms. Iverson's technique of abrasion was used and the results were cosmetically satisfactory.

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Titles marked with an asterisk (*) are abstracted.

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Evaluation of Ophthalmoscopic Changes of Hypertension and Arteriolar Sclerosis. H. G. Scheie.—p. 117.
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American J. Digestive Diseases, Fort Wayne, Ind.

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Multiple Primary Carcinomas of Small Intestine: Review of Literature. M. Feldman.—p. 1.
Subacute Alcoholic Cirrhosis with Hemorrhage from Esophageal Varices with Reference to Portal Hypertension and Therapy. H. B. Cates.—p. 3.
Surgical Contrast Visualization of Pancreatic Ducts with Study of Pancreatic External Secretion. L. Leger.—p. 8.
Five Echinostomes Found in Man in Malayan Archipelago. C. Bonne, G. Bras and L. K. Joe.—p. 12.
Influence of Tannic, Tartaric and of Acetic Acid Upon Olfactory Acuity and Sensations Associated with Food Intake (Note Concerning Appetite Stimulating Effect of Wine. D. L. Irvin, A. Durra and F. R. Goetzl. —p. 17.

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American Journal of Surgery, New York

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Silent Carcinomas of Breast. J. Rabinovitch, P. Rabinovitch and B. Pines. —p. 179.
Massive Collapse of Lungs, Atelectasis, and Intravascular Pulmonic Hypervolemia. M. G. Baggot.—p. 184.
Treatment of Burns and Their Complications. J. T. Rush.—p. 187.

Nylon Prosthesis in Lesions of Shoulder, Elbow, and Finger. —The growing popularity of prosthetic reconstruction of the hip-joint prompted MacAusland to use prostheses in the treatment of four patients with lesions at other joints. The first patient had a severe comminuted fracture dislocation of the shoulder, which went untreated and was followed by fibrosis about the humeral head. Three years after this injury the patient sustained a comminuted fracture of the neck of the humerus. The humeral head and callus were excised, and a Judet's femoral head prosthesis was introduced. One and a half years after the operation, all motions of the shoulder except the abductor power were practically normal. Experience in this first case made it clear, however, that a femoral head prosthesis is poorly adapted in shape to the shoulder joint. A new prosthesis made of nylon and designed to conform to the normal humeral extremity was used in a second case of fracture dislocation of the shoulder, with excellent results. In the third patient an elbow prosthesis fashioned of nylon was used in the reconstruction of an elbow with a large bone defect of the distal portion of the humerus. The last patient had the relatively common "squash" type of fracture of the distal end of the metacarpal bone. About 10 months after the injury a nylon prosthesis was substituted for the distal end of the fractured bone. A model was made of a metacarpal head, slightly smaller in size than the metacarpal head of the patient's sound index finger and the prosthesis was fashioned according to the model. Ten days after the operation passive movements were begun. Within five weeks the patient requested permission to return to work. Experience in the use of a prosthesis at joints other than the hip is still limited, but the early results are encouraging and further use of the method seems warranted.

Arkansas Medical Society Journal, Fort Smith

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Journal of Gerontology, St. Louis

8:1-136 (Jan.) 1953. **Partial Index**

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Normal Precordial Electrocardiogram in the Aged. O. Olbrich and E. Woodford-Williams.—p. 40.
Effect of Change of Body Position on Precordial Electrocardiogram in Young and Aged Subjects. O. Olbrich and E. Woodford-Williams. —p. 56.
Potassium Content of Plasma and Red Cells in Various Age Groups. A. Videbaek and P. G. Ackerman.—p. 63.
Thyrotoxicosis in Aged Individuals. K. Iversen.—p. 65.
Present-Day Surgical Viewpoints and Procedures in Vascular Surgery of Aged: Review. R. A. Nabatoff.—p. 70.
Retirement and the Professional Worker. R. J. Havighurst and E. Shanas. —p. 81.

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New England Journal of Medicine, Boston

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New York State Journal of Medicine, New York

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*Surgical Treatment of Cancer of the Tongue. W. F. MacFee.—p. 163.
*Influence of Modern Antibiotics on Abdominal Surgery. R. K. Brown. —p. 171.
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Roentgenologic Aspects of Coarctation of Aorta. C. T. Dotter, I. Steinberg and D. Catalano.—p. 182.
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Transient Muscle Cramps After Organic Mercurial Diuretics. W. Modell. —p. 211.
Practical Aspects of Thyroidectomy. B. J. Ficarra.—p. 215.

Surgical Treatment of Cancer of the Tongue.—Cancer of the tongue, which was first a surgical problem and then an irradiation problem, is now becoming a surgical problem again. The results of surgical treatment, while far from ideal are superior to the results of irradiation therapy, particularly with respect to cervical lymph nodes. Carcinomas of the posterior third of the tongue, however, are frequently of a highly undifferentiated type and respond better to competent irradiation than surgery. In theory, every carcinoma of the tongue should be widely excised, and a bilateral complete excision of the upper and lower cervical lymph nodes should be carried out to offer the patient his best chance of survival. In practice these procedures involve at least three major operations. In most clinics an attempt is made in the individual case to fit the operation to the extent of the disease. In some cases, excision of the primary lesion is combined with homolateral upper neck dissection alone; in others a bilateral upper neck dissection is done; in a third group a complete neck dissection is done on the side of the lesion and an upper neck dissection on the opposite side. Complete bilateral neck dissection is done in relatively few cases. The technique of removing the primary growth as well as that of the excision of the cervical lymph nodes is presented in detail. With respect to the primary tumor, it is obvious from collected reports that in approximately half the cases that appear for treatment there is failure completely to excise or destroy the lingual cancer. The five year survival rate in patients without cervical metastasis does not, as a rule, exceed 50%. In general, the five year arrests in patients without cervical lymph node metastasis have been approximately 45%. In patients with proved cervical lymph node metastasis the five year arrests have been approximately 15%. The five year survival rate in patients with bilateral cervical metastasis has not been determined, but undoubtedly it is low.

Antibiotics and Abdominal Surgery.—According to Brown, abdominal surgery had reached an advanced state of development before the advent of antibiotics and it has not shown great change attributable solely to antibiotics. Abdominal surgery deals with mechanical defects in which infections play secondary roles. Antibiotics are not needed for clean surgical operations, but they are useful systemic adjuncts in the treatment of complicating invasive infections. Without an accurate bacterial diagnosis antibiotics should be used with definite limitations as to dose and time of administration, for example 400,000 units of penicillin to be repeated every 12 hours for four doses. If benefit is not obvious within 48 hours, a change or discontinuance of antibiotic therapy should be considered. Prophylactic use of antibiotics systemically is unnecessary and unwise, but topical use in the prevention of contamination is warranted. The illustrative case of a 6-year-old girl is reported. The patient was admitted to the hospital after six days of lower abdominal pain. A large appendiceal abscess was palpable abdominally and rectally. Drainage was established per rectum, yielding several ounces of yellow pus. Culture revealed Streptococcus viridans, Str. anaerobius, and Staphylococcus aureus. The child was treated with penicillin and aureomycin. On the 17th postoperative day, appendectomy was performed with great ease. Recovery was rapid. It is common practice to postpone appendectomy for two months after drainage of an appendiceal abscess. Experiences such as the reported one suggest that this problem should be restudied to determine the optimum interval. Delay may be indicated to build up the patient's general condition and to avoid technical difficulties from the presence of inflammation, but there is increasing evidence that spread of infection by operation under such circumstances can be prevented.

Pediatrics, Springfield, Ill.

11:1-88 (Jan.) 1953

*Comparative Effects of Penicillin, Aureomycin and Terramycin on Streptococcal Tonsillitis and Pharyngitis. F. W. Denny, L. W. Wannamaker and E. O. Hahn.—p. 7.
Comparative Study of Canine Distemper and a Respiratory Disease of Man. J. M. Adams.—p. 15.
Congenital Dislocation of Hip: Diagnosis and Natural Course. G. W. Plummer.—p. 28.
Pattern of Growth of Selected Groups of Breast-Fed Infants in Iowa City. S. L. Paiva.—p. 38.
Natural Regression of Pulmonary Cysts During Early Infancy. J. Caffey. —p. 48.
Renal Water Requirement of Infants Fed Evaporated Milk With and Without Added Carbohydrate. E. L. Pratt and S. E. Snyderman.—p. 65.

Effects of Penicillin, Aureomycin and Oxytetracycline on Tonsillitis.—A clinical evaluation of the relative merits of penicillin, aureomycin and oxytetracycline ("terramycin"), for the treatment of group A streptococcic tonsillitis and pharyngitis, was conducted at an Air Force Base, between March 31 and May 4, 1951. A homogenous group of early streptococcic infections was selected by the following criteria: (1) exudate on the tonsils or pharynx, (2) a total leukocyte count of 10,000 or greater, and (3) duration of symptoms less than 31 hours. Patients were assigned to one of four therapeutic groups according to corresponding suits in decks of well shuffled cards. Fifty-three patients were treated with penicillin, 53 with aureomycin, 51 with oxytetracycline and 50 received placebos. Penicillin was administered by intramuscular injection of 600,000 units of crystalline procaine penicillin G daily for 5 days. Crystalline aureomycin hydrochloride or oxytetracycline hydrochloride was administered orally in a dose of 1 gm. on admission and 0.5 gm. every 6 hours for 19 additional doses. The control patients received lactose placebos every 6 hours for 20 doses. Under treatment with these agents most of the symptoms and signs subsided somewhat more rapidly than in control patients, leukocytosis was reduced, and antibody formation was diminished; but in the dosage used no one drug was consistently most beneficial. Penicillin was the most effective drug in eradicating streptococci from the throat. Nausea and vomiting occurred frequently among the patients receiving aureomycin, and diarrhea was common in both the aureomycin and oxytetracycline-treated groups. The authors feel that final determination of the drug of choice should await comparison of the effects on suppurative and nonsuppurative complications in larger groups of patients.

Pennsylvania Medical Journal, Harrisburg

56:1-80 (Jan.) 1953

Elective Versus Emergency Abdominal Surgery. F. W. Bancroft.—p. 21.
The Doctor of the Future. T. Parran.—p. 28.
Newer Treatments in Contagious Diseases. C. C. Fischer.—p. 31.
*Foreign Bodies and Burns of Eye. J. S. Lynch.—p. 35.

Foreign Bodies and Burns of the Eye.—Foreign bodies on the surface of the cornea or conjunctiva are dislodged by tears or may be removed by irrigation. They rarely cause complications, and never produce scarring. Those lodged subconjunctivally or buried in the sclera are often difficult to remove, but they likewise rarely cause complications. However, foreign

bodies embedded in the cornea below the epithelium will produce cicatrization, and prompt removal with minimal trauma is essential. A 1% solution of homatropine hydrobromide is instilled following the removal of embedded foreign bodies. The author rarely applies an eye pad following the removal of foreign bodies unless there is a large denudation of the epithelium. Reasons why eye pads should not be used are: the small corneal wound will epithelize within a few hours; the bacterial count is increased within the eye covered by a patch; an eye pad removed by the patient is rarely properly replaced; the eye pad prevents binocular vision and also limits peripheral vision; these visual handicaps prevent most patients from returning to their work; and an eye patch is psychologically bad. Thermal burns of the eye from heated metals, flame, hot grease, and boiling water resemble acid burns in that they usually are not progressive, while alkali burns become progressively worse. In case of chemical burns, whether acid or alkali, the eye should be thoroughly flushed with water. Trying to neutralize an alkali burn with a weak solution of acid is time-consuming and dangerous. An anesthetic is instilled, sufficient to relieve pain and lid spasm. The eye is then irrigated with isotonic sodium chloride solution; 2% fluorescein is instilled and again the eye is thoroughly flushed. The fluorescein reveals the extent of the damage. All devitalized tissue and foreign material should be removed. It is important that no solid particle of a chemical remain lodged under the upper lid or in the folds of the conjunctiva. Homatropine hydrobromide is then instilled, and the cul-de-sac should be filled with an antiseptic or anesthetic ophthalmic ointment. The following day, the eye is again flushed, and secondary infection or a beginning symblepharon should be watched for at each dressing. The so-called flash burns, which cause actinic keratoconjunctivitis, occur in persons working near welders. The "flash" is manifested by pain, photophobia, lacrimation, inflammation, and swelling of the conjunctiva and lids. The patient has a feeling of sand or grit in the eyes. Relieving the pain is the only treatment required. The same form of keratoconjunctivitis may result from exposure to an ultraviolet lamp or to the sun.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

81:571-742 (Dec.) 1952. **Partial Index**

Effect of Estrogens on Serum Precipitable Iodine. W. W. Engstrom, B. Markardt and A. Liebman.—p. 582.

Concentration Changes in Urinary Electrolytes Produced by Mercurial Diuretics. A. Farah, T. S. Cobbey and W. Mook.—p. 601.

Comparison of Eosinophil and Circulating 17-Hydroxycorticosteroid Responses to Epinephrine and ACTH. V. C. Kelley, R. S. Ely, R. B. Raile and P. F. Bray.—p. 611.

Poliomyelitis and Coxsackie Viruses Isolated from Normal Infants in Egypt. J. L. Melnick and K. Agren.—p. 621.

Epidemic Influenza B and C in Navy Recruits During Winter of 1951-52. P. Gerber, R. L. Woolridge, J. R. Seal and S. R. Ziegra.—p. 624.

Variables in Agglutination and Lysis of Human Red Cells by Newcastle Disease Virus (NDV). Ch'ien Liu.—p. 646.

*Rabies Street Virus Strains in Syrian Hamster and in Swiss Albino Mouse. R. L. Reagan, W. C. Day and A. L. Brueckner.—p. 654.

Diphtheria Antitoxin Formation in Horse at Site of Injection of Toxoid and Adjuvants. J. Freund, E. M. Schryver, M. B. McGuiness and M. B. Geitner.—p. 657.

Occurrence of Tapered Collagen Fibrils from Human Sources with Observations on Mesenchymal Neoplasms. W. G. Banfield.—p. 658.

Effect in Man of New Indandione Anticoagulant. J. B. Field, M. S. Goldfarb, A. G. Ware and G. C. Griffith.—p. 678.

Participation of Adrenal Cortex in Alterations in Carbohydrate Metabolism Produced by Epinephrine. W. W. Winternitz and C. N. H. Long.—p. 682.

Experimental Porphyria. III. Hepatic Type Produced by Sedormid. R. Schmid and S. Schwartz.—p. 685.

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Experimental Study on Ectopic Beats Following Intravenous Injection of Veratrine. D. Scherf, S. Blumenfeld, P. Mueller and R. Terranova.—p. 701.

Studies on Phenylpyruvic Oligophrenia. Phenylpyruvic Acid Content of Blood. G. A. Jervis.—p. 715.

*Gross Resistance to Antibiotics: Effect of Exposures of Bacteria to Carbomycin or Erythromycin in Vitro. M. Finland, C. Wilcox, S. S. Wright and E. M. Purcell.—p. 725.

Rabies Street Virus Strains in Hamsters and Mice.—Hamsters and mice were challenged intracerebrally and hamsters rectally with 14 strains of rabies street virus in order to determine the better species of animal and route of inoculation in diagnostic work for rabies. With 6 of the 14 strains, the incubation periods in intracerebrally inoculated hamsters were shorter than in the mice. Although the incubation period was longer in the hamsters challenged rectally, no preliminary treatment to eliminate bacterial contamination was necessary. The advantage of rectal over intracerebral administration of virus was demonstrated with one strain. In this instance, the specimen was so grossly contaminated that all hamsters and mice inoculated intracerebrally succumbed to bacterial infection within the first 24 hours, whereas those hamsters challenged rectally were unaffected by the contaminants. Examination of stained touch preparations revealed that the Negri bodies in infected hamster brains were larger and more numerous than those in infected mouse brains.

Cross Resistance to Antibiotics.—Cross resistance to one antibiotic resulting from repeated or prolonged exposure to another has been demonstrated to occur between aureomycin and oxytetracycline ("terramycin"), between either of these agents and chloramphenicol, and between streptomycin and neomycin. In the course of studies originally designed to investigate bacteriological aspects of the new antibiotic carbomycin ("magnamycin") and its clinical potentialities, it became apparent that the antibacterial spectrum of this new agent closely parallels that of erythromycin. A study of cross resistance between these two agents was, therefore, undertaken. Both of these new antibiotics are highly active against gram-positive and gram-negative cocci, moderately active against strains of Haemophilus, and are essentially inactive against coliform and enteric bacilli. Against susceptible bacterial strains erythromycin is usually from 4 to 16 times more active than carbomycin, weight for weight. Repeated subcultures of staphylococci and of certain strains of streptococci in the presence of increasing concentrations of either one of these antibiotics result in fairly rapid and marked increases in resistance not only to the antibiotic to which it was exposed but to the other agent as well.

Surgery, St. Louis

33:161-320 (Feb.) 1953

Anatomy of Pulmonary Stenosis and Atresia with Comments on Surgical Therapy. T. N. P. Johns, G. R. Williams and A. Blalock.—p. 161.

Unsuitability of Transventricular Autogenous Slings for Diminishing Valvular Insufficiency. T. C. Moore and H. B. Shumacker Jr.—p. 173.

*Homologous Arterial Grafts and Autogenous Vein Grafts Used to Bridge Large Arterial Defects in Man: Report on 14 Cases. F. N. Cooke, C. W. Hughes, E. J. Jahnke and S. F. Seeley.—p. 183.

Influence of Diameter Disproportion and of Length on Incidence of Complications in Autogenous Venous Grafts in Abdominal Aorta. E. J. Schmitz, E. A. Kanar, L. R. Sauvage and others.—p. 190.

Aneurysm Formation in Experimental Vein Grafts in Thoracic Aorta. J. Johnson, C. K. Kirby and J. D. Hardy.—p. 207.

*Critical Study of Present Criteria Governing Selection and Use of Blood Vessel Grafts. R. A. Deterling Jr., M. S. Parshley and J. W. Blunt.—p. 213.

Nonsuture Aortic Shunt—Experimental Study. R. J. Izant, C. A. Hubay and W. D. Holden.—p. 233.

Emergency Treatment of Massive Bleeding from Esophageal Varices by Transesophageal Suture of These Vessels at Time of Acute Hemorrhage. R. R. Linton and R. Warren.—p. 243.

Evaluation of Lumbar Sympathectomy in 200 Consecutive Cases of Peripheral Vascular Disorders. J. A. Kirtley Jr., S. Y. Garrett and R. S. Martin Jr.—p. 256.

Growth of Collateral Arterial Circulation in Sympathectomized Arteriosclerotic Leg—Oscillometric Study. L. N. Atlas.—p. 268.

Actions of Intra-Arterial Diodrast, Thorotrast, and Sodium Iodide on Peripheral Pulse Volume of Lower Extremity. R. P. Jepson and F. A. Simeone.—p. 276.

Analysis and Follow-Up of 100 Popliteal Aneurysms. R. W. Gifford Jr., E. A. Hines Jr. and J. M. Janes.—p. 284.

Comprehensive Surgical Management of Aortic Saddle Emboli. J. W. Lord Jr. and G. Burke.—p. 294.

*Congenital Diverticulum of Left Ventricle: Case Report. W. J. Potts, A. DeBoer and F. R. Johnson.—p. 301.

Homologous Arterial Grafts and Autogenous Vein Grafts for Arterial Defects.—In caring for the wounded who sustained vascular injuries in Korea, Cooke and associates reestablished the continuity of all major arteries, either by suture anastomosis of the damaged artery, or, if the size of the defect precluded approximation of the vessel, by graft. It has long been established that homologous arterial grafts and autogenous vein grafts can be used and will be initially effective in restoring vascular continuity. The fate of such grafts, however, has

been controversial. Whenever possible, definitive surgery was delayed three months after wounding to allow collateral circulation to adjust to increased demands. After description of the method of suturing the vessels, brief case histories are given of 14 patients with traumatic aneurysms and arteriovenous fistulas of major vessels in whom vascular continuity could not have been reestablished by suture repair or direct anastomosis. Homologous arterial grafts were used in five cases. Occlusive changes occurred at the graft site in two of these cases, one after four months and the other after seven months. Autogenous vein grafts were used in the other nine cases. At the present time eight autogenous grafts appear to be functioning well; one graft thrombosed following a severe postoperative infection. The evidence as to the adequacy of function is not incontrovertible in all cases. The period of follow-up is relatively short, the longest being only 12 months. However, the authors are of the opinion that, excluding the aorta, the use of autogenous vein graft offers the best method of restoring the continuity of major arteries in which large defects exist.

Criteria Governing Selection of Blood Vessel Grafts.—Although pioneer experimental work established the clinical applicability of vessel transplants, it became apparent that criteria for the selection of material, as well as the optimal period of storage, would have to be established for such grafts. Experiments were made on dogs with frozen grafts and with grafts stored in a nutrient solution at 4 C for periods up to 212 days. Autopsy studies were also made on 500 persons, only 20% of whom were less than 40 years of age, to determine what limitations should be set on the age of persons from whom vessels for transplanting are to be obtained. Summarizing their observations the authors stress the following points with regard to procurement, storage, and use of aortic homografts: 1. Satisfactory results have been obtained with nonviable grafts preserved by quick freezing or lyophilization or stored for over 40 days in a nutrient electrolyte solution. 2. Viability of cells in a graft is not an essential factor in assuring functional success. 3. The acceptable age of a donor individual should be estimated from his physiological appearance and cause of death rather than from stated age. 4. Individuals in whom death is caused by or associated with a condition which may be transmissible, or the etiology of which is not fully understood, should be excluded as donors. 5. Emphasis should be directed toward rapid refrigeration of the body with less concern being exhibited over the interval of time between death and procurement of vessel grafts. Aseptic technique should be employed when obtaining these vessels. 6. Suitable donors, properly handled, should yield satisfactory grafts for a period well beyond six hours after death. Grafts obtained from 16 to 35 hours after death have been used clinically with success.

Congenital Diverticulum of Left Ventricle.—Resection of a congenital diverticulum of the heart is still a rare surgical procedure, the literature containing only three previous reports of its performance. Potts and associates performed a fourth such operation on what they believe to be the oldest living patient with this anomaly recorded and the first to be operated on in this country. The patient was a 9-year-old boy who entered the hospital because of a pulsating mass in a large ventral hernia present since birth. The mother stated that the child was normal in every respect except for the hernia. There was no intolerance to exercise, no pain, and no change in color during or after exercising. There was a 3 by 12 cm. defect in the anterior abdominal wall extending from the xiphoid process down to the midabdomen. There was no visible umbilicus. Protruding through this defect was the hernia. At operation, a hockey stick incision was made from the left nipple to the xiphoid process and extended downward in the midline to below the level of the defect in the abdominal wall. Beneath the skin the diverticulum came in view. The left pleural cavity was entered through the fifth interspace. The fifth and sixth ribs were cut at the sternum, and the xiphoid process was removed to insure adequate exposure. After the diverticulum was exposed, 20 cc. of iodopyracet (diodrast®) was injected. A roentgenogram showed direct communication between the diverticulum and the left ventricle. The pericardium was missing on the anterior surface of the diverticulum, but posteriorly there was a pericardial sac, the margins of which were fused to each side and to the blunt tip of the diverticulum. The anterior surface of the heart was fixed to the posterior surface of the sternum, making it impossible to reduce the cardiac portion of the hernia into the chest cavity. It was apparent that to correct the abnormality it would be necessary to amputate the diverticulum. This was done, after the probable effect of such amputation had been tested by placement of a clamp. Since discharge from the hospital the boy has been well. A recent electrocardiogram still shows minor abnormalities, but evidence of the bundle branch block has disappeared. In view of the fact that of the nine reported children with congenital diverticulum of the heart all but one died in infancy and the ninth died at the age of 4 years, the authors believe that this abnormality should be treated surgically as soon as possible.

Tennessee State Medical Assn. Journal, Nashville

46:1-40 (Jan.) 1953

Convulsive Disorders in Children. W. G. Crook.—p. 1.
Argyrosis of Cornea and Conjunctiva. J. W. Wilkes.—p. 11.

46:41-76 (Feb.) 1953

Intra-Oral Cancer: Survey of 151 Intra-Oral Lesions from East Tennessee Tumor Clinic. J. C. Prose.—p. 41.
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Relationship of Physical Hyperlipemia to Atherosclerosis. R. F. Ackerman and D. B. Zilversmit.—p. 52.
Present Status of Management of Marginal Ulcer. B. F. Byrd Jr.—p. 56.

Texas Reports on Biology and Medicine, Galveston

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Wound Healing Properties of the Blood Hydrolysate, Sanguinin. M. N. Bader.—p. 773.
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Studies on Toxic Plants for Antibacterial Effects. H. M. Burlage, M. E. Jones, G. F. McKenna and A. Taylor.—p. 803.
Effect of Various Tumor Growth on Water Content of Liver in Mice and Chick Embryos. J. C. Knox Jr., H. F. Rosene and A. Taylor.—p. 830.
Tumor Resistance Phenomena: IV. Acquired Resistance. J. B. Loefer and R. B. Mefferd Jr.—p. 849.
Nasal Myiasis of Man Due to Screwworm Fly: (Callitroga Americana, C & P). D. W. Micks and V. C. Calma.—p. 855.
Central Heating Systems and Associated Potential Dangers of Carbon Monoxide. C. A. Nau and J. Neal.—p. 866.
Dynamic Neurogliology. C. M. Pomerat.—p. 885.
*Frequency of Cancer in White and Colored Races as Observed at Autopsy Between 1920 and 1949 at Medical Branch. R. H. Rigdon, H. Kirchoff and M. L. Walker.—p. 914.

Frequency of Cancer in White and Negro Races.—A total of 5,264 necropsies on white and Negro persons over 20 years of age have been performed at the University of Texas Medical School in 30 years. In this series there were 929 cases of malignant tumor, an incidence of 17.6%. Usually death resulted from the tumor; however, in a few cases the cancer was an incidental finding at autopsy. Whereas 45.5% of the persons autopsied were Negroes, only 37.8% of the cancers were found in Negroes. Male subjects accounted for 68.7% of the total autopsies, but 69.9% of the cancers were found in men. Of the autopsies on men, 59.3% were made on white men, but 65.3% of the male subjects with cancer were white. Whereas white women accounted for only 43.3% of the autopsies on women, they had 55% of the cancers detected in women. Thus cancer is more frequent in white men and women than in Negro men and women.

Wisconsin Medical Journal, Madison

52:1-116 (Jan.) 1953

Psychiatrist in Court. H. H. Reese and E. R. Hodgson.—p. 14.
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Civilian Medical Care for Army, Navy and Air Force Personnel and Their Dependents. From Fact Sheet, Department of the Army, Office of the Surgeon General, Washington 25, D. C., 15 November 1951.—p. 34.
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British Heart Journal, London

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Role of Nervous System in Maintenance of Pulmonary Arterial Hypertension in Heart Failure. D. Halmágyi, B. Felkai, J. Iványi and others. —p. 15.
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Potassium and Cardiographic Changes in Diabetic Acidosis. C. B. Henderson.—p. 87.
Effect of Digitalis on Normal Electrocardiogram. M. Tiliakos.—p. 95.
Ischemic Heart Disease and Peripheral Occlusive Arterial Disease. L. McDonald.—p. 101.

British Journal of Tuberculosis, London

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Cardiospasm: Intermittent: Initial Manifestation of Carcinoma of the Cardia. N. Asherson.—p. 39.
Serial Haemagglutination Tests During Treatment of Pulmonary Tuberculosis. D. A. L. Bowen and R. C. Jennings.—p. 41.
Mediastinal Emphysema Complicating Therapeutic Pneumoperitoneum. C. M. Tinker.—p. 46.
Early Treatment Centre for Pulmonary Tuberculosis. F. E. de W. Cayley, E. Sanders and D. McIntosh.—p. 49.

Journal of Physiology, London

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Possible Enzymatic Basis for Differential Action of Mydriatics on Light and Dark Irides. W. J. Angenent and G. B. Koelle.—p. 102.
Excitant Action of Acetylcholine and Other Substances on Cutaneous Sensory Pathways and Its Prevention by Hexamethonium and D-Tubocurarine. W. W. Douglas and J. A. B. Gray.—p. 118.

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Influence of Carbohydrate Metabolism on Bacterial Allergy: Its Relation to Cortisone Desensitisation. J. W. Cornforth and D. A. Long.—p. 160.
*Prevention of Postoperative Pulmonary Atelectasis. K. N. V. Palmer and B. A. Sellick.—p. 164.
Practical Penicillin. R. I. Cohen.—p. 168.
Simultaneous Aortic and Axillary Embolism: Successful Treatment Followed by Mitral Valvotomy. E. G. Hardy and C. Noon.—p. 170.
Metatarsal Formula in Relation to March Fracture. C. H. Barnett and J. R. Napier.—p. 172.
Influenza in Early Pregnancy: Effects on Foetus. W. A. B. Campbell. —p. 173.

Prevention of Postoperative Pulmonary Atelectasis.—After operation, the normal mechanisms for the clearance of bronchial secretion are impaired and changes in the bronchial secretion may take place, which lead to retention of sputum in the lungs and atelectasis. Therefore the prevention of postoperative atelectasis depends essentially on preventing retention of sputum and on recognizing those cases in which this is especially likely. Palmer and Sellick found that the risk of a patient's developing atelectasis is high when one or more of the following factors is present: a history of bronchitis; clinical or radiological evidence of bronchitis; an infection of the upper respiratory tract in the 14 days preceding the operation; and abdominal operations, especially partial gastrectomy and cholecystectomy, and repair of inguinal hernia. Thus atelectasis is particularly liable to develop in patients who, by reason of chronic infection or irritation of the bronchial tree, produce a viscid bronchial secretion. Smokers and elderly men are high risk cases because they commonly have bronchitis, and those undergoing abdominal operations because they have most difficulty in expectorating secretion after operation. Because the routine measures at their hospital, the use of procaine pencillin, and breathing exercises before and after operation had failed to prevent postoperative atelectasis, the authors used a new method. This consists of postural drainage with vibratory and clapping percussion and inhalation of isopropylarterenol before and after operation. Isopropylarterenol has a powerful bronchodilator and vasoconstrictor action on the bronchial mucosa, and it is given to overcome the spasm and the congestion of the bronchi. The incidence of atelectasis in 90 patients undergoing abdominal operations who were treated by this regimen was 9%, compared with 43% in 90 patients treated with breathing exercises before and after operation. All patients received procaine penicillin before and after operation. Since some observers had found that the use of isopropylarterenol alone prevented postoperative atelectasis, the authors investigated this on a group of 160 patients undergoing operations for inguinal hernia or partial gastrectomy. It was found that neither the bronchodilator, isopropylarterenol, alone nor postural drainage and vibratory and clapping percussion alone was more effective than breathing exercises in reducing atelectasis, and so it was concluded that postural drainage with vibratory and clapping percussion to the chest wall and a bronchodilator are necessary for the prevention of postoperative atelectasis.

Minerva Medica, Turin

43:1361-1400 (Dec. 17) 1952. **Partial Index**

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*Research on Etiopathogenic Factors of Arthrosis of Knee with Special Reference to Disturbances of Venous Circulation. A. Robecchi, G. Einaudi and G. Impallomeni.—p. 1366.
Study on Survival of Erythrocytes Transfused by Means of Differential Agglutination with Serum Anti-O. T. G. Formaggio.—p. 1376.
*Activity of *p*-Aminosalicylic Acid on Brucella. M. Terni.—p. 1380.

Arthrosis of Knee and Venous Circulation Disturbances.—A study was made of 150 patients with alterations in the venous circulation of the lower extremities, and of 150 patients with arthrosis of the knee to determine whether there was any relationship between the two diseases. Of the patients with arthrosis, 63 were men (average age 51) and 87 were women (average age 57). The disease was bilateral in 50 men and 81 women. It was associated with obesity in 58% of the patients, hypertension in 43.8%, prolonged standing position in 62%, alteration of statics in 32%, flatfoot in 87%, previous traumatic lesions to the knee in 16.5%, menopause in 42%, and diseases of the venous system and venous circulation in 20% (31 patients). In the last-named group (14 men and 17 women) 29 patients had varicose veins, 12 had venous stasis, and 2 had sequelae of phlebitis. In the only patient of this group with unilateral arthrosis of the knee the venous circulation was impaired in the leg of the same side; of the 30 with bilateral arthrosis 15 had bilateral venous circulation diseases. In most of the 150 patients with arthrosis more than one of the above etiological factors was present concurrently, but flatfoot was the commonest (131 patients). Of the 150 patients with impairment of the venous circulation of the legs, 55 were men (average age 52 years) and 95 were women (average age 53 years). Of them 110 had varicose veins and 40 sequelae of phlebitis. Many of these patients also had the collateral diseases that were found in the first group of patients. Arthrosis of the knee was evident in 80 of them, and when the disturbances of the venous circulation were unilateral, arthrosis was present in the knee of the same leg. Ten of 14 patients with

bilateral sequelae of phlebitis and venous stasis had arthrosis, which in eight involved both knees. Although these two diseases were frequently found concurrently, in many patients of these groups one of the above factors (such as obesity, trauma, or the menopause) could have been the causative agent of either of them. These factors were also present, however, in patients with disturbances of the venous circulation who did not have arthrosis of the knee. The authors reject the hypothesis that arthrosis may precipitate impairment of the venous circulation. Conceding that many etiological factors can cause arthrosis of the knee, they suggest that when diseases of the venous system are present in the legs, they may interfere with the nutrition of the joint tissue, favor the onset of regressive phenomena in them, or render them more sensitive to the pathogenic action of other exogenous and endogenous causes and thus lead to arthrosis of the knee. The two diseases are not, it seems, correlated by a direct cause and effect relation.

Para-Aminosalicylic Acid in Brucella Infections.—The sensitivity of 19 strains of Brucella to *p*-aminosalicylic acid was studied in vitro. The activity of the drug was very mild, the minimum inhibiting concentration being 10,000 μg per 1 cc. of culture medium. The bacterial inoculum used, however, was very concentrated, and when the number of bacteria was decreased 100 times, the minimum inhibiting concentration became 100 times less. This great influence of the initial bacterial concentration may account for the pronounced differences of activity of the drug reported by various authors in their in vitro studies. When *p*-aminosalicylic acid was added to streptomycin in vitro, the action of the antibiotic was not enhanced. *p*-Aminosalicylic acid was also used to protect mice from experimental infection produced with intraperitoneal inoculation of 4 minimum lethal doses of strain 171 of Br. melitensis in the virulent phase S. Survival time of the protected mice was significantly prolonged. The activity of *p*-aminosalicylic acid was enhanced by "Trifenil," which by itself had little effect on the infection. The mechanism of action of *p*-aminosalicylic acid on Brucella cannot be evaluated from these few cases, but it is suggested that it is not entirely an inhibiting action. Infections with few bacilli are influenced more than massive infections.

Presse Médicale, Paris

60:1739-1818 (Dec. 25) 1952. **Partial Index**

Histotopography of Pulmonary Lipase: Its Significance in Study of Pulmonary Lipodieresis. J. Deluare and F. Ludwig.—p. 1739.
*Esophageal Prosthesis of Plastic Material. P. Chalnot, R. Bénichoux and P. Gille.—p. 1742.
Chronic Renal Papillary Necrosis in the Diabetic. J. Van Keerberghen and J. Lederer.—p. 1745.
*Osseous Localizations of Hodgkin's Disease. L. Leger, P. Pineau and J. Andrieux.—p. 1763.
*Endocardial Fibroelastosis and Primary Cardiac Failure in the Infant. R. Clément, J. Gerbeaux and J. Couvreur.—p. 1767.
Iconography of Neuro-Retinal Angiomatosis. H. Fischgold, P. Brégeat, Y. Le Besnerais and M. David.—p. 1790.

Plastic Esophageal Prosthesis.—Easy reestablishment of esophageal continuity in patients with cancer of the esophagus, permitting the resumption of feeding by normal channels on the third or fourth day, would solve one of the principal problems connected with their survival. Replacement of the esophagus by the transposition of an abdominal organ is not entirely satisfactory and may be dangerous. Experiments with dogs have shown that prosthetic tubes of plastic material (polyvinyl) can be successfully used to replace the esophagus, at least temporarily. The comparative simplicity of the operation, its short duration, and the perfect tolerance of the tissues for the tubes suggest that the method should be tried in man. The tubes are prepared for use with four sutures at each end: the first two are on opposite sides 5 mm. from the end and the other two, also opposite each other, are placed 20 mm. below the first but midway between them. The tube is not pierced by the sutures, and this eliminates any danger of communication between the lumen of the esophagus and the mediastinum. The tubes are sterilized and packed in sealed ampuls. Various lengths and diameters should be at hand when the operation is begun. As much as 10 cm. of the esophagus may be replaced; from 2 to 3 cm. at the ends are enough for fixation to the tube. Not only must the tube be firmly fixed to the esophagus, but the esophagus and the tube must both be anchored to the prevertebral muscles to prevent the tube from falling prematurely. Regeneration of the esophageal tissue around the prosthetic tube is facilitated by keeping it in place as long as possible; some contraction (from 1/10 to 1/4 of the diameter) is inevitable after the prosthesis is removed, but the regenerated segment can subsequently be dilated, if necessary. The effectiveness of this operation will be increased in man, because intensive feeding of the patient from the beginning can be carried out if a gastrostomy is performed before the tube is placed in position.

Osseous Localizations of Hodgkin's Disease.—The osseous localizations of Hodgkin's disease may follow, accompany, or even precede its other signs. The spine and the sternum are among the bones most affected, perhaps because of their proximity to lymph node concentrations. The malignant process often spreads from the lymph nodes to the adjacent bone, invading it gradually; sometimes, however, the metastases are hematogenous, forming foci in the medulla before the trabeculae are affected. Diagnosis may be difficult; even the histological findings are sometimes misleading. Opinions concerning prognosis vary, and attempts have been made to establish a connection between the histological type of the disease and its localization in the bones. The existence of conditions intermediate between malignant lymphogranulomatosis (Hodgkin's disease) and various other malignant diseases, such as plasmocytosis, histiomonocytic reticulosis, and reticulosarcoma, would explain the varying sensitivity to x-rays shown by these entities. Osseous involvement is usually considered an indication of increased malignancy, with the average survival after discovery of an osseous focus being only three and one-half years. Prolonged remissions sometimes occur: of three patients observed by the author, one has had a follow-up of more than 3 years and another is alive and well after more than 20 years. Serious disorders, such as spontaneous fractures; vertebral collapse, which should be guarded against by appropriate immobilization at the first sign of trouble; and spinal cord compression, which may be relieved by laminectomy, often result from the local bone changes. General treatment is essentially radiological, and may be given locally or from a distance, if the purpose is to irradiate both the bones and the lymph node concentrations. Massive doses must be used, and the patient must be kept under constant observation. The sensitivity of bone varies widely: sometimes, recalcification and regeneration of the bone take place, and at other times the radiological appearance of the bone will remain unchanged. X-ray treatment should be given routinely, however, because of the almost constant relief it provides from pain.

Endocardial Fibroelastosis and Primary Heart Failure in Infants.—The etiological circumstances and anatomical lesions of primary heart failure in infants should be accurately determined as often as possible so that appropriate prophylactic and therapeutic measures can be instituted whenever feasible. An opportunity for extended study of endocardial fibroelastosis was offered by a child who was first hospitalized for primary heart failure at the age of 10 months and who died three and one-half months later in a second acute attack of heart failure. The pregnancy and delivery were normal, and the child weighed 3,370 gm. at birth. Her appetite was always capricious, but no cardiac abnormalities were found when, at the age of 5 months, she was hospitalized for otitis. She was brought back to the hospital five months later with dyspnea, anorexia, and diarrhea. Respirations were 72 per minute, there was no cyanosis, and pulmonary examination was negative. The pulse rate was from 180 to 200, almost uncountable; the heart sounds were deadened; and the liver was large and painful, but there was no edema. Radiographs showed globular enlargement of the heart shadow, which extended to the costal wall on the left. The temperature, taken every three hours, did not exceed 37.3 C. Three electrocardiograms were made and all showed a sinus rhythm, left axis deviation, and a negative T

wave in D1, V4 and V5, indicating a disturbance in the area of the left ventricle. A diagnosis of probable endocardial fibroelastosis was made, and treatment with digitalis (12 drops daily for three days) was instituted. Functional improvement resulted, but regression of the cardiac shadow was minimal. One month later the child was again brought back to the hospital with right hemiparesis. Radiography of the skull, and eye-ground and electroencephalographic examinations were negative. The heart condition was unchanged; the child was happy and smiling, but dyspneic at the slightest agitation, with pronounced anorexia. Treatment with cortisone, after a Thorn test had produced a fall in the blood eosinophils from 220 to 136 per cubic millimeter, was unsuccessful and had to be discontinued. The second attack of heart failure, occurring three and one-half months after the first, resulted in death within a few hours. At autopsy the heart, and especially the left ventricle, were found to be greatly enlarged; and the endocardium showed fibroelastic thickening and had a highly characteristic whitish, opalescent appearance. The etiology and pathogenesis of endocardial fibroelastosis are not yet clear, but the condition may well be congenital in origin. It is apparently not incompatible with survival; one case has been reported in an adult and its course in children is sometimes prolonged.

Schweizerische medizinische Wochenschrift, Basel

83:25-48 (Jan. 10) 1953. **Partial Index**

Psychiatric-Clinical Studies Concerning Selye's Adaptation Theory: Second Report. H. Binswanger and L. Meier.—p. 25.
Metabolism of Electrolytes and Water in Diabetic Coma. R. Mach, E. Mach and H. Plattner.—p. 30.
Nitrogen Metabolism in Myocardial Infarction. K. Tietze and F. H. Schulz.—p. 34.
*Treatment of Thrombosis and Embolism in Gynecology and Obstetrics with Repository Liquaemin Sodium and Ethyl Biscoumacetate. F. E. König.—p. 40.

Anticoagulant Treatment of Thrombosis and Embolism in Gynecology and Obstetrics.—Between November, 1950, and December, 1951, 134 women with deep thromboses and embolisms were given combined treatment with heparin and synthetic coumarin derivatives at the university gynecological clinic in Zurich. In the author's patients treatment was initiated with intravenous injections of a proprietary preparation of rapidly acting heparin ("liquaemin") sodium containing 5,000 I.U. of heparin in 1 cc.; it was continued with intramuscular injections of repository heparin sodium containing 40,000 I.U. of heparin in 1 cc. and 0.02 mg. of ephedrine. On the first day of treatment patients with thrombosis were given 15,000 I.U. of heparin intravenously and 45,000 I.U. of repository heparin intramuscularly, while patients with embolism were given first 15,000 I.U. of heparin every four hours and then 45,000 units of repository heparin intramuscularly. For the following five days the women were given daily at least one intramuscular injection of 45,000 I.U. of repository heparin. Treatment was then continued with ethyl biscoumacetate (tromexan® ethyl acetate). Repeated determinations of coagulation time and prothrombin time are indispensable. The mortality among the 76 gynecological patients under treatment with heparin and ethyl biscoumacetate was 2.6% (two patients with inoperable carcinoma of the body of the uterus); there was not a single death among the 58 obstetric patients. The duration of rest in bed was shortened by three to seven weeks, and fewer late sequelae may be expected because of the milder course of the disease. Within the same period two patients with inoperable carcinoma (one of the ovary and one of the body of the uterus) and one puerperal patient died of the first lightning attack of pulmonary embolism before treatment could be instituted. Undesirable side-effects of anticoagulant treatment were rare. Hemorrhages could be controlled with the now available anticoagulant-antagonizing drugs (protamine sulfate and natural vitamin K_1 soluble in fat). Discontinuation of anticoagulant treatment was not necessary in any case. As a result of his experience the author states that with early diagnosis and correct management therapy of thromboembolism apparently has reached the maximum of its efficacy, while further progress may still be expected with respect to prevention of thrombosis and embolism by anticoagulants.

Semaine des Hôpitaux, Paris

29:163-200 (Jan. 14) 1953. **Partial Index**

*Treatment of Initial Phase of Apoplexy with Intravenous Injection of Aminophylline: Physiopathologic Basis and Clinical Results. F. Mainzer.—p. 163.
Clinical Study of Periarteritis Nodosa. A. Shedrow.—p. 170.
Primary Systemic Amyloidosis. P. Le Coulant, J. David-Chaussé and L. Texier.—p. 176.

Treatment of Initial Phase of Apoplexy with Intravenous Injection of Aminophylline.—The therapeutic effect of aminophylline in the initial phase of apoplexy can only be explained by its vasodilating action. This is a decisive argument in favor of the theory that apoplexy results from a spasm of the cerebral vessels. Coronary or cerebral circulatory insufficiency caused by a fall in pressure may produce myocardial infarction and apoplexy in some cases, but in others angiospasm is the effective mechanism. Apoplexy is accompanied in most cases by a hypertensive crisis in which the arterial pressure rises abruptly above its previous level. This crisis has often been considered the determining factor in cerebrovascular accidents. Arterial hypertension and cerebral arteriosclerosis provide the conditions essential to the precipitation ol hypertensive crises, but the mechanism by which essential hypertension is produced is entirely different from that which produces the hypertensive crisis and apoplexy. Numerous experiments have shown that an impediment in the cerebral circulation causing ischemia of the nervous tissue produces an immediate rise in the arterial pressure. Hypertension associated with apoplexy accompanies disturbed cerebral circulation so regularly that it can be considered a clinical sign of such a disturbance, and since the hypertensive crises are produced by cerebral vascular changes, they, like apoplexy, can be treated with aminophylline intravenously administered. Aminophylline, however, is ineffective in cases of essential hypertension. The structural lesions found in apoplexy are probably produced by cerebral anoxia, which leads to necrosis of the nervous tissue. Hemorrhage may originate in this necrotic center, either by diapedesis of erythrocytes or rupture of the vessel according to the state of the circulation and the functional vascular changes. The foci of softening and the hemorrhages may thus be regarded as anemic and hemorrhagic infarcts of the brain. The analogy between these phenomena and the pathology of the coronary circulation is complete, since the duration and intensity of anoxia in the myocardial tissues are the deciding factors in the development of definitive lesions: if the anoxia is brief, the disturbance remains functional; if it is prolonged, structural changes ensue. Prompt treatment of apoplexy with intravenous administration of aminophylline is especially designed to prevent the development of foci of softening by suppressing the cerebral vasoconstriction which produces them.

Thorax, London

7:285-360 (Dec.) 1952

Physical Properties of Normal Lungs Removed After Death. M. B. McIlroy.—p. 285.
Post-Mortem Study of Visco-Elastic Properties of Normal Lungs. M. B. McIlroy and R. V. Christie.—p. 291.
Post-Mortem Study of Visco-Elastic Properties of Lungs in Emphysema. M. B. McIlroy and R. V. Christie.—p. 295.
"Embryoma of Lung." W. G. Barnard.—p. 299.
Idiopathic Pulmonary Haemosiderosis. G. B. Tait and M. Corridan.—p. 302.
Survey of 501 Cases of Bronchogenic Carcinoma. A. J. Lea.—p. 305.
*Further Report on Lung Resection for Pulmonary Tuberculosis. B. J. Bickford, F. R. Edwards, J. R. Esplen and others.—p. 310.
Broncho-Pulmonary Aspergillosis: Review and Report of Eight New Cases. K. F. W. Hinson, A. J. Moon and N. S. Plummer.—p. 317.
Some Observations on Historical Appreciation, Pathological Development, and Behaviour of Round Tuberculous Foci. W. M. Macleod and A. T. Smith.—p. 334.

Lung Resection for Pulmonary Tuberculosis.—Bickford and co-workers reassert the general principles of lung resection for pulmonary tuberculosis and report their experiences in 729 cases. Resection of lung tissue is carried out for two reasons:

(1) to remove an area of disease which remains persistently active despite bed rest, chemotherapy, and relaxation therapy; (2) to remove an area of disease that has reached a stage of apparent "quiescence," but is nevertheless in danger of reactivation under conditions of stress and intercurrent infection. Resection is only carried out when the body defenses against the disease have been mobilized. The confluent areas are assessed as to the likelihood of healing. If this is doubtful, they are considered for resection. The continued activity of a caseous pneumonia following rupture of an intrabronchial gland may require removal of the affected area of the lung. Resection of lung tissue in patients under the age of 16 is carried out only where the disease has remained active over a long period. Between the ages of 16 and 20 there is considerable instability of pulmonary tuberculosis, and between these ages resection is done only after careful assessment. After resection the remaining lung tissue must not be permitted to expand beyond its normal size. This entails reducing the volume of the thorax by elevation of the diaphragm and/or resection of ribs. Tuberculous endobronchitis at the proposed line of section of the bronchus must be cleared as much as possible by chemotherapy before resection. The advisability of resection in individual forms of pulmonary tuberculosis is discussed in greater detail. Fourteen of the 729 patients (1.29%) died within three months of operation. Pleural infection occurred in 25 cases. Air leaks after segmental resection are probably due to persistent patency of intersegmental bronchioles. This occurred in 5 of 100 consecutive segmental resections. The management of these patients is described. A follow-up of 223 patients operated on two years or more previously shows that 197 patients (88%) are well.

Wiener klinische Wochenschrift, Vienna

65:81-96 (Jan. 23) 1953. **Partial Index**

*Improved Method for Treatment of Bronchial Asthma with Corticotropin (ACTH). G. Holler, O. Weinmann and F. Lorenz.—p. 84.
Extracellular Fluid and Adrenal Cortex Hormones. H. Ellegast.—p. 88.
Clinical Observations on Significance of Certain Serologic Coli Types for Pathogenesis of Enteritis in Infants. P. Krepler.—p. 89.
Priority in Determination of So-Called Leukemic Hiatus. E. Lauda.—p. 91.

Corticotropin in Bronchial Asthma.—Corticotropin (ACTH) was used for treatment of 10 patients with severe, life-threatening, and refractory bronchial asthma. A solution of 50 mg. of the drug in 500 cc. of "compensan" (a proprietary vehicle containing a molecular complex that exerts a retarding effect on the absorption of corticotropin from the blood) to which 10,000 units of heparin had been added, was administered by intravenous drip with the aid of a rubber catheter for 18 hours. The same amount of this solution was administered twice. Later on 25 mg. of cortisone in 500 cc. of "compensan," and from the 6th day onward 10 mg. of cortisone in 500 cc. of "compensan" were given. The patients were placed on a salt-free and high potassium diet, and in addition they were given 2 to 4 gm. of potassium chloride daily and 1,000 mg. of vitamin C intravenously twice a week. Corticotropin therapy by intravenous drip could be continued only for 3 to 10 days because sooner or later thrombophlebitis occurred in all the patients due to the lack of polyvinyl catheters. The total dose of corticotropin administered varied from 230 to 250 mg., i. e., one half or one quarter of the dose required for intramuscular administration, and approximately the same dose as that used by Segal and Herschfus. Despite the short duration of the treatment, results were gratifying. Pronounced improvement with relief of bronchospasm was obtained by four patients on the first day of treatment, and by four others on the second day; in two patients pulmonary symptoms, particularly dyspnea, subsided completely on the second day of treatment and in two other patients on the third day of treatment, thus much earlier than by intramuscular route, and that despite smaller dosage. An average drop in eosinophils of 45% occurred on the first day of treatment, and of 56% immediately after the corticotropin infusion was terminated. In three patients symptoms did not recede completely, but in these patients administration by intravenous drip had to be discontinued on the fifth or sixth day of the treatment because of the early occurrence of thrombophlebitis. The artificially produced thrombophlebitis was benign and subsided within a few days under treatment by rest in bed and application of "hirudoid" ointment (a proprietary preparation of an animal organ extract). Follow-up of the patients was not long enough to permit definite evaluation with respect to recurrences. The authors' method for treatment of bronchial asthma with corticotropin by intravenous drip is time-saving and less expensive as compared to that by intramuscular route; progress which already has been achieved seems to offer prospects for further improvement. It is recommended that immediately after successful hormone therapy the patients should be admitted to a high altitude sanatorium for at least several months, and children even for one to two years.

Wiener medizinische Wochenschrift, Vienna

103:75-90 (Jan. 24) 1953. **Partial Index**

*Contribution to Hormone Therapy of Inoperable Bronchial Carcinoma and Carcinoma of Rectum. O. Erlsbacher, F. Kopecek and R. Kovacsevich.—p. 76.
Nailing of Pertrochanteric Fracture. G. Hienert.—p. 79.
Study of Sequelae of Gastrectomy Performed for Gastric and Duodenal Ulcer. S. Greif and G. Mittelbach.—p. 80.

Hormone Therapy of Inoperable Carcinomas.—Since 1947, 34 men and 3 women with inoperable bronchial carcinoma have been treated with a proprietary preparation of dienestrol ("retalon"). The drug was administered parenterally in doses of 5 to 10 mg. daily. In addition cylindrical dienestrol pellets of 25 mg. were implanted three to four times at intervals of four weeks into the supraclavicular lymph nodes involved by metastases in several male patients. When favorable effects of the treatment became manifest the dose of the drug was reduced to 10 mg. three times a week. Treatment was continued for prolonged periods of from six months to three years. The general condition of most of the patients improved considerably. Anorexia subsided and the body weight increased. Pain disappeared, temperature was restored to normal, and the patients felt comfortable and did not require any alkaloids. The size of the involved lymph nodes decreased. Few metastases were revealed at necropsy. One patient was maintained practically free of complaints for three years and one for more than two years. Hyperpigmentation of the nipples and gynecomastia, respectively, occurred in most of the male patients, while dienestrol did not exert any hormone-specific effect on the endometrium of the three female patients all of whom were aged over 60. Five patients with inoperable carcinoma of the rectum were treated with local infiltration of the tumor with estrogens. A female patient was given 150 mg. of estradiol (crystalline ovocyclin®) in the course of six months; for more than three years she was maintained free of complaints, but death resulted from massive metastases four years after the institution of the hormone therapy. A male patient was treated by local infiltration of the tumor with 300 mg. of a crystalline estrogen preparation and has been maintained almost free of complaints for two years. The follow-up of the three other patients who have been treated by local infiltration with estrogens is still too short for evaluation. Ten patients with inoperable carcinoma of the stomach and several patients with inoperable sarcomas resulting in metastases did not respond to treatment with dienestrol. As a result of these experiences with hormone therapy, the authors suggest that treatment with estrus-producing substances arrests the cancerogenic principle, which may be closely related to the somatropin of the anterior pituitary and may present a chemically modified, abnormal somatropin. Consequently local treatment (infiltration) of inoperable carcinoma or nonresectable involved lymph nodes with estrogens is recommended in addition to general treatment.

BOOK REVIEWS

Back down the Ridge. By W. L. White. Cloth. $3. Pp. 182. Harcourt, Brace and Company, Inc., 383 Madison Ave., New York 17, 1953.

This book provides a realistic account, with a decided medical background, of the present Korean War. In fact, the author started out to write only about medical techniques, most of which, he says, have been performed within sound of the guns at the front and are, today, saving the lives of thousands of boys. As he worked into the story, "another figure began struggling free of the typewriter keys." This figure is the average American boy who faces danger, pain, and death in Korea. Apparently, the author obtained his facts from ex-bombardiers, infantrymen, gunners, doctors, nurses, and technicians who served or were wounded at the front and were returned to the United States. He relates specific cases and gives the names and the circumstances in which the persons were wounded. The text relates their movement from the front to the various medical installations along the line of communications, their experiences while being transported, and their versions of their own stories. The author's down-to-earth selection of words is rather typical of Army life. Clomping and clobbering mean being severely wounded; Mash means Mobile Army Surgical Hospital; a meat wagon is an ambulance; and cav stands for cavalry. Guys, buddies, snort and pull (for a little bourbon), kid, bone ward, and others appear repeatedly as do technical medical terms. The author understands medical organizations of both the battlefield and the zone of the interior. The stories of first aid and of surgical treatment are so vivid that the reader seems to be at the soldier's side carrying the bottle of blood that so frequently goes with the injured man while he is being transported by litter, helicopter, airplane, or jeep.

The author describes the way in which, on any given day, a platoon takes a hill. A high crest of the wave of wounded soldiers thunders into the nearest BA station before the boys on top of the ridge have finished digging in. "From now on, it is like widening circles of ripples on a pond. Within an hour or so this wave of wounded, its crest not quite so sharp, rolls into Mash. About 72 hours later they feel the wave, a little flatter now, in Tokyo Army Hospital. A couple of weeks later, the first of them reach Letterman in San Francisco. In still another week this wave of wounded from that particular ridge, even more flattened out but still a rise in the case-load, has reached East Coast army hospitals like Walter Reed and Murphy. So the girls on the wards who have had Korean duty, when they see the beds begin to fill up, wonder which particular ridge it was. And why we needed it. Then, months later, this wave—so flat now you can hardly call it that—limps out into civilian life. . . . After that the wave, still flattening out, is lost or forgotten in history."

Sterility: The Diagnostic Survey of the Infertile Couple. By Walter W. Williams, A.B., M.D., Geneticist, Springfield Hospital, Springfield, Mass. Cloth. Pp. 351, with 175 illustrations. Walter W. Williams, M.D., 20 Magnolia Terrace, Springfield, Mass., 1953.

Since the author has been engaged in the study of sterility from 1915, first in connection with superior breeding cattle and from 1933 with human beings, he is well qualified to write this book. The purpose of the book is to provide clinicians with the necessary information applicable to a sterile couple. The program outlined has been found entirely practical in application in the author's private practice without the aid of any outside research or institutional facilities. A period of three to four months is usually required for the completion of the routine diagnostic survey of an infertile couple. This survey includes the following basic visits: (1) initial interview of both husband and wife, (2) semen analysis, (3) medical survey of husband, (4) medical survey of wife, (5) uterotubal insufflation and various miscellaneous examinations of the wife, (6) sperm viability observations in the wife, (7) endometrial biopsy and miscellaneous studies, and (8) résumé of clinical and laboratory findings. In examining about 90% of infertile couples, the physician may adhere rather closely to this fixed diagnostic study.

There are 17 chapters in the book, 4 of which have been contributed by other authors (Robert W. Noyes, Irving F. Stein, Melvin R. Cohen, and B. B. Weinstein). The chapters dealing with semen are outstanding because they reflect the author's early and great interest in this subject, although all the chapters are well written. Almost all of the illustrations are clear and instructive. There is an excellent, complete bibliography at the end of the book. There is also an appendix with reproductions of 22 forms used by Williams. In the form that gives instructions concerning artificial insemination is the following statement: "Husband will push the plunger of the syringe which injects the semen and sign a statement to the effect that he has inseminated his wife. This statement is countersigned by the wife." Such a statement should avoid any legal entanglements.

This book is an outstanding contribution and contains all the useful and practical information about sterility in both men and women. The only criticism is that the numerous, long footnotes in tiny type in several of the chapters are irritating. The author is to be congratulated because he has written this excellent book.

Gynecology: Diseases and Minor Surgery. Compiled and edited by Robert J. Lowrie, M.A., M.D., F.A.C.S., Associate Clinical Professor of Obstetrics and Gynecology, College of Medicine, New York University, New York. Foreword by Claude E. Heaton, M.D. Cloth. $22.50. Pp. 806, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1952.

In this massive volume 79 contributors from 30 medical schools in the United States, Canada, and England present the results of years of experience in diagnosing and treating diseases of the female pelvic organs. The book is volume 1 of a proposed encyclopedia of gynecology. Volume 2 is to be published during 1953. The series is intended to provide comprehensive coverage of the entire field, not merely sketches or résumés. While volume 1 offers what might be termed medical gynecology, it also includes some minor surgery. Volume 2 is to deal with major surgery of the female pelvic organs.

In consideration of the high cost of hospitalization, the authors have emphasized procedures that may be carried out in the physician's office with the patient under local anesthesia or short-term general anesthesia. It is also recognized that many communities are remote from hospital centers, and the physician must do the best he can with the available means.

The layout of this first volume is in twelve sections, beginning with the anatomy and physiology of the female reproductive system and associated structures and concluding with medications. Subject and an author indexes follow.

The chapter on medications is especially valuable because it contains a complete pharmacopeia for gynecology and describes physiology and clinical applications in relation to therapy. The new remedies are discussed in full, including synonyms, manufacturers, dosage and potency, methods of administration, indications, contraindications, and other necessary information. There are also tables showing pertinent data on hormones, vitamins, sulfonamides, penicillin, streptomycin and its analogs, and some of the standard drugs such as ergot and its derivatives.

Editor Lowrie contributes chapter eight, "Diagnosis in Gynecology." Since an adequate history is of primary importance, a sample record sheet showing all important data is included. Salient points are: notation of pain, bleeding, discharge; general examination; abdominal examination; vaginal examination; and the proper use of instruments. Laboratory

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

aids should be used to gain supportive evidence after a working diagnosis has been established. Dr. Lowrie also contributes chapters on diseases and conditions in the vulva, vagina, and uterus and adnexa. A satisfactory bibliography follows each chapter. Most of the illustrations are black and white, and the legends are clear and detailed. The section on the vascular system of the female pelvis is illustrated by color plates. Volume 1 seems comprehensive in every respect.

Endocrine Treatment in General Practice. Edited by Max A. Goldzieher, M.D., and Joseph W. Goldzieher, M.D. Cloth. $8. Pp. 474, with 19 illustrations. Springer Publishing Company, Inc., 44 E. 23rd St., New York 10, 1953.

It was the primary intention that this book provide the practicing physician with a knowledge of endocrine therapy as it is applied to nonendocrine as well as to endocrine disorders. In order to accomplish this, the editors, father and son, called on 19 collaborators to contribute chapters of such a diversity of topics that the book lacks any semblance of unity or coherence. For example, the chapter on carbohydrate and fat metabolism, by G. E. Anderson, is, for the most part, a discussion of diabetes and its management. Other chapters, such as calcium metabolism by G. S. Gordon, male infertility by W. O. Nelson, and virilism by A. E. Rakoff, are fundamentally of interest to endocrinologists. On the other hand, chapters on the skin by F. Reiss, eyes by D. M. Gordon, disorders of resistance by the two editors, neoplastic diseases by O. H. Pearson, and most of the remaining chapters cover so many unrelated fields that they constitute only a series of unrelated essays. The fact that cortisone and corticotropin have found application in many disorders of nonendocrine origin is no basis for the indiscriminate use of hormonal products in conditions in which their efficacy is questionable. One would question the advisability of the use of thyroid preparations, as advocated, for obesity, or the climacteric in men, of water restriction in premenstrual edema, of "growth" hormone, crude pituitary extract, or pituitrin in obstinate constipation. The book is replete with many other therapeutic suggestions that are of dubious value. Except for a few chapters, the book is disorganized and diffuse in its manner of presentation. It reflects too greatly the early spirit of endocrine therapy in which all disorders were considered manifestations of endocrine disease and amenable to available hormonal preparations.

You and Tuberculosis. By James E. Perkins, M.D., Managing Director, National Tuberculosis Association, New York, and Floyd M. Feldmann, M.D., Assistant to Managing Director, National Tuberculosis Association. In collaboration with Ruth Carson. Cloth. $2.50. Pp. 176. Alfred A. Knopf, Inc., 501 Madison Ave., New York 22, 1952.

A patient who hears for the first time that he has tuberculosis and that he must undergo a period of treatment removed from his family and his business is usually a very disturbed person. As its name implies, "You and Tuberculosis" is literally you and tuberculosis and is directed to the many persons who must adjust their lives in order to save themselves. On recognizing that most patients are unprepared to adjust themselves to life in a sanitorium and that too few physicians provide their patients with the kind of information that will help them through this rugged experience, the authors of this book have taken on themselves the responsibilities that could be carried by the family doctor. Factors discussed are the reaction of persons to the diagnosis, their entrance to the hospital, their ultimate adjustment to the routine of treatment, how they may use the time that hangs heavily on their hands, the adjustments of their family, and the adjustments both family and patient must make when the patient ultimately leaves the hospital and rejoins the family and group of friends who have gotten along without him for so long. A brief historical sketch of tuberculosis as a disease and a description of some of the modern research directed toward its control and treatment complete this excellent book written for the nonmedical person interested in tuberculosis.

This would be an excellent volume for physicians to use as an aid in the orientation of a patient who has just heard that he has tuberculosis. The physician himself might learn from this book the words of one syllable that will enable him to help his patients more effectively.

World-Atlas of Epidemic Diseases. Part I. Edited by Professor Dr. med. Ernst Rodenwaldt. Assistant scientific editors: Dr. med. Ludwig Bachmann, et al. In collaboration with Professor Dr. med. Richard-Ernst Bader, et al. [In German and in English.] Sponsorship: Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C. Cloth-boards 225 marks. Pp. 128, with illustrations and 52 maps. Falk-Verlag, Burchardstrasse 8, Hamburg 1, 1952.

During World War II, German epidemiologists, under the direction of Dr. H. Zeiss, director of the Institute of Hygiene of the University of Berlin, prepared the material for this atlas. It is patterned somewhat after Hirsch's "Handbook of Historical and Geographical Pathology," written in 1881, but this publication includes large multicolored maps that depict not only the prevalence of epidemic diseases but also trends of prevalence.

The book is large, measuring approximately 15 in. by 20 in. The text is written in both English and German. This is the first volume. Work on the second volume is now in progress, and it will include diseases such as tuberculosis, influenza, pneumonia, and other respiratory diseases, which are more important than some of those now included.

The atlas is limited to diseases in areas of military importance. Although during wartime it is possible to collect a great deal more information than is generally available, some of the selections are somewhat limited, probably because the material available does not depict a true picture. However, for those interested in geographical epidemiology, the text should be very useful, Owing to its size and cost, the atlas probably will be available only in libraries.

Clinical Instruction and Its Integration in the Curriculum. By Deborah MacLurg Jensen, R.N., B.S., M.A., Instructor in Nursing Education in Sociology, University of Missouri, Columbia. In collaboration with Elizabeth O'Connell, R.N., B.S., M.S., Ruth E. Lindberg, R.N., B.S., M.S.Ed., and Dillie R. Gulmi, R.N., B.S.N.E. Third edition. Cloth. $5.75. Pp. 542, with illustrations. C. V. Mosby Company, 3207 Washington Blvd, St. Louis 3, 1952.

The aim of the author in this edition is to lessen the gap between theory and practice in all aspects of nursing and to strengthen the position of clinical instruction as an integral part of the curriculum in schools of nursing. To keep pace with the changing emphasis in clinical teaching in nursing education, the title of this book has been changed in each successive edition: it was first published in 1942 under the title "The Principle and Practice of Ward Teaching."

Unit 1 presents an over-all view of nursing education from early development to contemporary school programs. In unit 2, the whole curriculum is discussed in its various phases, such as planning, integration, selecting and evaluating teaching material, and administration. This chapter will provide the clinical instructor with a view of the total plan in the school in which she will develop instruction in her clinical field. Methods of instruction are presented in unit 3, and the way in which these techniques may be utilized by the clinical instructor are emphasized. Unit 4 deals with measurement and guidance in the clinical field. Unit 5 deals with faculty organization and preparation. Some samples of teaching in the four main clinical fields are presented in order to provide students in these fields with help from the experiences of other teachers. The chapters on medical, surgical, pediatric, obstetric, and psychiatric nursing are written by nurses who are experts in each area. Each chapter is followed by study questions and an annotated bibliography, and there are 68 figures. Appendix 1 includes experience record forms to be used by students; appendix 2 includes sources for teaching aids.

The author states her aim clearly and has successfully directed material and presentation toward accomplishing this aim. The author's ideas and material are progressive and positive, yet there is an underlying tone of understanding of the present serious problems that are obstacles to universal acceptance of her ideas. This book is highly recommended. All nurses will find pertinent and helpful information in its pages. For those directly concerned with teaching institutions, careful critical study will be rewarding.

QUERIES AND MINOR NOTES

THE SPINAL FLUID AND POLIOMYELITIS

To the Editor:—*Kindly advise how much emphasis can be put on spinal fluid examination in a suspected case of poliomyelitis in which there are no positive clinical findings.*

William H. Tyler, M.D., Muskegon, Mich.

Answer.—Under ordinary circumstances, there would be no indication for a lumbar puncture unless there were some clinical findings. As a rule, patients with nonparalytic poliomyelitis will have some stiffness of the neck or back and almost always will have an elevated temperature. In such cases, results of spinal fluid examination are characteristic of poliomyelitis. There are, however, several conditions in which results of the preliminary examination of spinal fluid may be deceptive. One of these is mumps meningoencephalitis, which often is manifest before there is any apparent swelling of the parotid glands. In tuberculous meningitis the spinal fluid has a cell count and gross resemblance to that in poliomyelitis, but the glucose level is generally below normal, which is not the case in poliomyelitis. Lymphocytic choriomeningitis and various forms of encephalitis may also cause some confusion. In addition, in the Coxsackie virus infection, the spinal fluid findings are said to be identical to those of poliomyelitis. In the midst of a poliomyelitis outbreak, the results of a spinal fluid examination are generally regarded as decisive in making the final diagnosis.

REMOVAL OF WISDOM TEETH

To the Editor:—*A boy, 15 years of age, has had orthodontic treatment for the last five years with good results; one tooth, however, seems to be slightly out of line. One orthodondist, after making roentgenograms of the patient's wisdom teeth, advised that the wisdom teeth, which have not erupted and are not coming in straight, be extracted so the rest of the teeth will have more room. Another orthodontist disagrees and does not advise extraction of the wisdom teeth. What is your opinion?*

M.D., Florida.

Answer.—The question of whether or not the third molars or wisdom teeth are the cause of relapse following orthodontic treatment has been debated for many years. Evidence seems to point to their innocence. The observation is often made that the irregularity of the lower front teeth develops regardless of whether the wisdom teeth are present, and it seems to appear at about the time that these teeth would be expected to erupt. The two phenomena occurring together makes them appear to have a cause and effect relation. The decision as to whether the third molar should be removed should be made on the basis of the roentgenograms of these teeth. If they are standing at such an angulation that there is no chance for their eruption and if the patient has reached the age of 17 or 18 it is sometimes wise to have them removed to avoid possible damage to the second molars immediately in front of them.

TRANSFUSIONS AND SULFOBROMOPHTHALEIN TEST

To the Editor:—*Are the results of the sulfobromophthalein (Bromsulphalein) test affected by multiple transfusions?*

M.D., Wisconsin.

Answer.—Unless some incompatible blood should be given in the transfusions, there is no reason to think that multiple transfusions would in any way affect the results of a sulfobromophthalein test.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

AORTIC INSUFFICIENCY

To the Editor:—*The statement has been made that in aortic insufficiency a rise in blood pressure is present. It would seem that the blood pressure should be lowered. Why do so many patients with rheumatic aortic insufficiency and an extremely low diastolic pressure fail to have angina pectoris? In aortic insufficiency, is there a rise in systolic blood pressure or a decrease in diastolic pressure?*

R. J. Behan, M.D., Pittsburgh

Answer.—With aortic insufficiency of important degree there is a rise in systolic blood pressure owing to an increased systolic ejection of blood from the left ventricle into the aorta and a fall in diastolic blood pressure caused by blood leaking back from the aorta into the cavity of the left ventricle during the diastolic period. Since coronary inflow depends not only on the caliber of the coronary vessels but also on the mean diastolic aortic pressure, angina pectoris is common in patients with free aortic regurgitation. Attacks of angina pectoris may occur in such patients with emotional or physical stress or may awaken them from sleep at night, when rapid forceful heart action, flushing and sweating, and rise in systolic and diastolic blood pressure may be observed. The factors that permit some patients with rheumatic aortic insufficiency and a low diastolic blood pressure to carry on without angina pectoris are imperfectly understood. They include the following factors: (1) these patients are usually in the younger age group in which little or no coronary sclerosis occurs; (2) the activity of some of these patients is sharply limited because of congestive heart failure; and (3) there may be sufficient coronary dilatation to compensate for the low diastolic blood pressure so that adequate coronary flow is maintained.

BREAST ATROPHY AFTER PREGNANCY

To the Editor:—*A multiparous woman of statuesque build states that prior to marriage she wore a size 38 brassière but now wears a size 32. This complaint is not only of aesthetic importance to her but also of general endocrinological interest. On bimanual pelvic examination, such women often show small uteri, other signs of hypo-ovarianism, or frank failure of ovarian function. Estrogen, even in massive doses, does not appear to influence this change. Can you help determine the cause?*

David Lee, M.D., Rivera, Calif.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—Following the birth of children, there is no appreciable decrease in the glandular tissue of the breasts of normal women. The breasts enlarge considerably as a result of the stimulation of pregnancy. This enlargement is due to a hyperplasia of the secretory glands and ducts as well as the supporting vascular and connective tissue structures. It is accentuated during the period of engorgement and lactation. If the woman does not nurse or when nursing is brought to an end, involution of the breasts takes place. They do not return to their normal, firm, nulligravid appearance, but they become pendulous and less firm. They may appear smaller than before pregnancy and there may be an actual decrease in size. The loss is entirely in the connective and fatty tissues, but the glandular portion returns to its resting state.

No endocrine therapy is effective in promoting the return of the breasts to their pregravid appearance. Estrogens stimulate the nipple and duct system only. Appropriate measures to support the breasts properly during pregnancy and lactation may aid in retaining some of their firmness and decrease their pendulous character. Equally important is weight control during pregnancy, for in the woman who gains weight excessively, there will be increased deposition of fatty areolar tissue in the breasts.

This increases the size and weight of the breasts during pregnancy and may result in increased distortion following normal involution.

ANSWER.—Part of the breast atrophy following pregnancy is due to the fact that there is considerable elastic tissue destruction and some resorption of the fatty component of the breast. This atrophy is more pronounced if there is a failure in ovarian function. However, one cannot assume that a small uterus is necessarily an indication of ovarian failure, unless the uterus is obviously atrophied. If there is amenorrhea or if menstruation occurs at prolonged intervals, there may be an estrogen deficiency. Vaginal smears may indicate whether ovarian failure is present. Likewise, an endometrial biopsy may also be of value for this purpose. If these tissues appear normal, the patient probably will not be benefited by any form of therapy. If they indicate a significant degree of ovarian failure, estrogens given parenterally, orally, or by inunction will probably cause growth of the breast, but this will be maintained only as long as therapy is continued.

CAN TWINS HAVE DIFFERENT FATHERS?

TO THE EDITOR:—*Is it possible for more than one father to participate in a single pregnancy in humans? In other words, in a case of fraternal twins, could the twins have different paternal heritage?*

Charles W. Rees, M.D., San Diego, Calif.

TO THE EDITOR:—*A court case in the jurisdiction of the circuit courts of Minnesota decided in favor of a husband who wished to prove that one of his twins was sired by himself and one by a neighboring farmer. Is it possible for a woman to conceive two children as the result of two separate acts of sexual intercourse and bear them as twins?*

M.D., Michigan.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—It is theoretically possible that two ova can be fertilized by different men if the coital acts take place within a short period. There are a few instances of superfecundation in humans recorded in the literature. Superfetation, the fertilization of a second ovum after one embryo has become well established, is in all likelihood impossible.

ANSWER.—It is not possible for more than one father to participate in a single pregnancy in humans, because a single pregnancy results from the fertilization of a single ovum by a single sperm. Identical twins result from the division of a fertilized egg and subsequent individual development. Theoretically, it is possible for fraternal twins to have more than one father if spermatozoa from two different donors are mixed, as may be possible in artificial insemination. Ovulation may be followed by fertilization within the time limits of the viability of both ovum and sperm. Some women ovulate more than once a month, and the second ovulation may occur soon after the first. If the second ovulation is followed by fertilization from a source other than the man who fertilized the first ovum, it is theoretically possible for the two pregnancies to coexist and fraternal twins be born as a result.

NOTE.—This question was considered at a recent meeting of the Committee on Medicolegal Problems of the American Medical Association, and the following comment was made. —ED.

We know this occurs in animals. I do not think anyone has proved or disproved it. There were two conflicting court decisions. One held that it could be possible, the other, that, from a scientific point of view, the possibility was rather remote. There is no scientific evidence either to refute or support the possibility. In animals, superfecundation has been observed, but, since we cannot experiment in man, no one has been able to do controlled experiments. There is a difference of opinion among obstetricians. If twins result from the discharge of two ova at the same time and if a woman in whom this occurred had intercourse with two fertile men in the same ovulation period, it would be possible wouldn't it? It certainly would seem so.

REGIONAL ILEITIS

TO THE EDITOR:—*A man, aged 43, with a history of recurrent abdominal cramps for many years, has had a roentgenographic diagnosis of regional ileitis, because of a "string sign." There is no evidence of fistulas, abscess, or acute obstruction. The string sign is in the distal ileum. Is surgical intervention indicated at this time, and, if so, which of the following procedures would be best:* (a) *ileocolostomy with exclusion (transection of ileum), or* (b) *excision of the ileum and ascending and transverse colon? If the first, should the transverse colon also be transected, producing a mucous (colostomy) fistula?*

M.D., New York.

ANSWER.—The diagnosis of regional enteritis is not wholly dependent on the roentgenologic findings. The clinical history of abdominal cramps, diarrhea, weight loss, and, frequently, general depletion, should go hand in hand with the roentgenologic evidence. The so-called string sign is indicative of a narrowing of the lumen and thickening of the wall of the bowel. Whereas the positive diagnosis of this condition usually suggested surgery a decade ago, now, because of the large recurrence rate and the response of these patients to medical measures, surgical treatment is usually held in abeyance, unless complications, such as obstruction or fistula and abscess formation, develop or the disease has reached the chronic unremitting stage. When surgical treatment becomes advisable, the procedure of choice would seem to be an ileocolostomy and removal of the disease process. The recurrence rate of this condition, with all types of surgical procedures, is high.

AVULSION OF DORSUM OF THUMB

TO THE EDITOR:—*What is the best method of covering the dorsum of a thumb that has been avulsed down to bone and tendon following a lathe injury? If the injury is not covered immediately by skin but allowed to granulate in, what type of skin graft would be indicated for delayed coverage?*

M.D., New York.

ANSWER.—When soft tissues have been avulsed to leave bone or tendon bare, a free graft could not be expected to give a satisfactory result. Such a graft could not heal over a bare tendon nor could the tendon be expected to move freely underneath it. If the defect is not too great, it may be possible to shift a flap of skin and subcutaneous tissue from one side and cover the raw surface from which the flap was taken with a graft of whole or part thickness skin. If conditions make shifting of an adjacent flap impossible, the only satisfactory solution is the use of a pedicle flap from another part. To permit such a wound to become covered with granulation tissue results in delayed healing, scar tissue formation, and definite loss of function. Granulation tissue might be successfully covered with a graft of part thickness skin, but, again, movement of the tendon underneath it could not take place.

THE RH FACTOR IN FOURTH PREGNANCY

TO THE EDITOR:—*A 28-year-old white woman is now six weeks pregnant. She is reported to be rh' negative, Rh_o negative. She has been pregnant three times, with no antenatal or postnatal complications. All three children are normal. What additional laboratory studies may be helpful in management of this case? What complications may develop prenatally at the time of delivery, and afterward?*

J. E. Green Jr., M.D., Ballinger, Texas.

ANSWER.—The Rh factor of the husband should be determined. If he is Rh_o negative, no further complications need be anticipated and no further tests done. If the husband is Rh_o positive, the absence of postnatal complications in the three previously born children suggests that he may be heterozygous Rh_o positive. This can be confirmed by examining his blood with an anti-hr' serum and by determining the Rh status of the previously born children and the husband's parents. If heterozygosity is established, it is possible the child will be Rh negative and, thus, would be unlikely to have fetal erythroblastosis. The finding of Rh antibodies in the patient's serum during pregnancy may presage fetal erythroblastosis in the

infant. The prognosis will differ, depending on the period of pregnancy during which they appear and their titer and quality. This last refers to differences in prognosis depending on the presence of so-called anti-Rh sodium chloride agglutinins, serum albumin agglutinins, true blocking antibodies, and agglutinins reacting with enzyme-treated red cells. Proper interpretation of such laboratory tests, when correlated with clinical findings, may permit determination of the most suitable postnatal management of the newborn infant. This may include having suitable blood available for transfusion, if indicated.

STEPPING ON A RUSTY NAIL

To the Editor:—*If a patient came into your office and told you that he had stepped on a rusty nail five days ago, would you give him tetanus antitoxin?*

John E. Evans, M.D., Winterset, Iowa.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—If the patient had been actively immunized previously, it would be advisable to give 1 cc. of fluid tetanus toxoid intramuscularly as a booster dose. Regardless of whether he had been actively immunized, because of the time elapsed since the injury, 5,000 units of tetanus antitoxin should be administered intramuscularly. If there are to be two injections, both should not be made in the same extremity. Sensitivity to horse serum should always be tested before antitoxin is injected. If the sensitivity test gives a positive result an attempt should be made to desensitize the patient, or, sometimes, bovine antitoxin should be used.

Answer.—Because of the delay, the minimum prophylactic dose of antitoxin should be 20,000 units. Administration of a dose of 40,000 units could not be criticized. Moreover, if the patient had tetanus toxoid in the past, administration of a booster dose of toxoid (in addition to the antitoxin) is justified. It is presumed that all precautions are taken to protect against acute serum sickness and that the subject has not been adequately protected with tetanus toxoid recently.

ODOR OF URINE IN HOUSE

To the Editor:—*I purchased a house in Florida, and in one closet there is a urinous odor. I have painted the floor and walls, but it still persists. Do you know of any method by which I could obliterate this odor? I understand that the former occupant kept cats in this closet.*

M.D., Florida.

Answer.—Oil of juniper lightly applied to local areas emitting the odor of urine is credited with the properties of dispelling, masking, or modifying the odor. The results may be only temporary, and repeated application may be required. Other counteracting agents are available commercially through such firms as Givaudan-Delawanna, Inc., 330 W. 42nd St., New York 18.

TOURISTS' ENTERITIS

To the Editor:—*A number of letters have appeared in* The Journal *concerning "tourists' enteritis." As some erroneous concepts have crept into them, the following discussion may throw light on the problem. The term "tourists' enteritis" undoubtedly refers to a form of diarrhea characterized by frequency of evacuation, the liquid character of the stools, and acceleration of the intestinal transit. To this triad, other general and local symptoms are added, according to the form. This picture, as ancient as mankind itself, occurs at all seasons of the year, with a greater preference for the summer, and is produced, in my country at least, by various causes. I have had occasion to see many examples in my 26 years of professional practice. In the majority of cases, establishing the cause has been a simple task and, when the investigation has been carried out with order and method, has seldom eluded me.*

In these 26 years of professional work, not once, in either Spaniards or foreigners, of whom I have attended many from all countries of the world, could the diarrhea be related to our excellent cookery, which is so much appreciated by all who visit us. Olive oil, the basic fat source of our diet, has never caused the slightest digestive trouble; its tolerance in the quantities in which it should be used has been and is still perfect, even for persons with delicate digestive systems. I can affirm that it is unique and without a substitute and far superior to the other fats (butter, margarine, soybean oil, and ground nut oil). I am convinced that the low percentage of persons with constipation in Spain is the result of the use of olive oil and especially the great consumption of raw olive oil, which, with bread, is the basis of the diet of the lower classes. When raw, it has a gentle bile-producing action, sufficient to correct intestinal laziness.

I have discussed with the officials of the Sindicato del Olivo the erroneous interpretations of tourists' enteritis given in the letters to the Editor and have been authorized by them to invite responsible specialists to come to Spain to study this problem, alone or with our collaboration, and thus be able to inform tourists who are visiting us in ever-increasing numbers. They would be rendering a great service to citizens of their country and would contribute to restoring the reputation of our olive oil, the best of the fats for human nutrition.

Dr. Juan Martinez Diaz
Instituto De Patologia Medica
Catedra De Endocrinologia Y Nutricion
Hospital General
Madrid, Spain

BACTERIAL MENINGITIS

To the Editor:—*In Queries and Minor Notes, in* The Journal, *Dec. 6, 1952, page 1443, inquiry was made on the permissibility of giving dihydrostreptomycin intrathecally. Although I realize that this matter is controversial, I believe that most authorities agree that dihydrostreptomycin should not be given intrathecally, at least not over long periods as is necessary in the treatment of tuberculous meningitis. I refer to a report on dihydrostreptomycin ototoxicity by Professor van Goidsenhoven and associates of the University of Louvain, Belgium* (J. Suisse Med. **38**:*1021, 1950*). *On the basis of a large series of patients and more than 500 audiograms, the authors came to the conclusion that the combined intramuscular and intrathecal administration of dihydrostreptomycin has "disastrous" effects on the cochlear nerve and that, therefore, only streptomycin should be given by the intrathecal route.*

William Konigsberger, M.D.
34 Robins Crescent
New Rochelle, N. Y.

To the Editor:—*In* The Journal, *Dec. 6, 1952, there is a reference to the use of dihydrostreptomycin intrathecally in meningitis. The answers of two consultants indicate that it is safe to give dihydrostreptomycin by this route. Because of increasing evidence that intrathecal dihydrostreptomycin produced a high incidence of deafness, a notice to manufacturers and labelers of streptomycin and dihydrostreptomycin was issued on May 9, 1952, suggesting that, in the next printing of their brochures for streptomycin and dihydrostreptomycin for parenteral administration, streptomycin rather than dihydrostreptomycin be recommended for intrathecal therapy, except for patients allergic to streptomycin.*

Henry Welch, Director
Division of Antibiotics
Food and Drug Administration
Washington 25, D. C.

JITTER LEGS

To the Editor:—*Regarding the query on "Jitter Legs" referred to by Dr. Sutton in* The Journal *Feb. 7, 1953, page 534, I believe the condition is commonly referred to as restless legs. I have never seen a patient who failed to obtain relief if given quinidine sulfate, 4 grains (0.26 gm.), an hour before bedtime. If cramps are also present they can be relieved by use of quinidine and/or calcium.*

Paul Lowell, M.D.
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Kansas City 30, Mo.